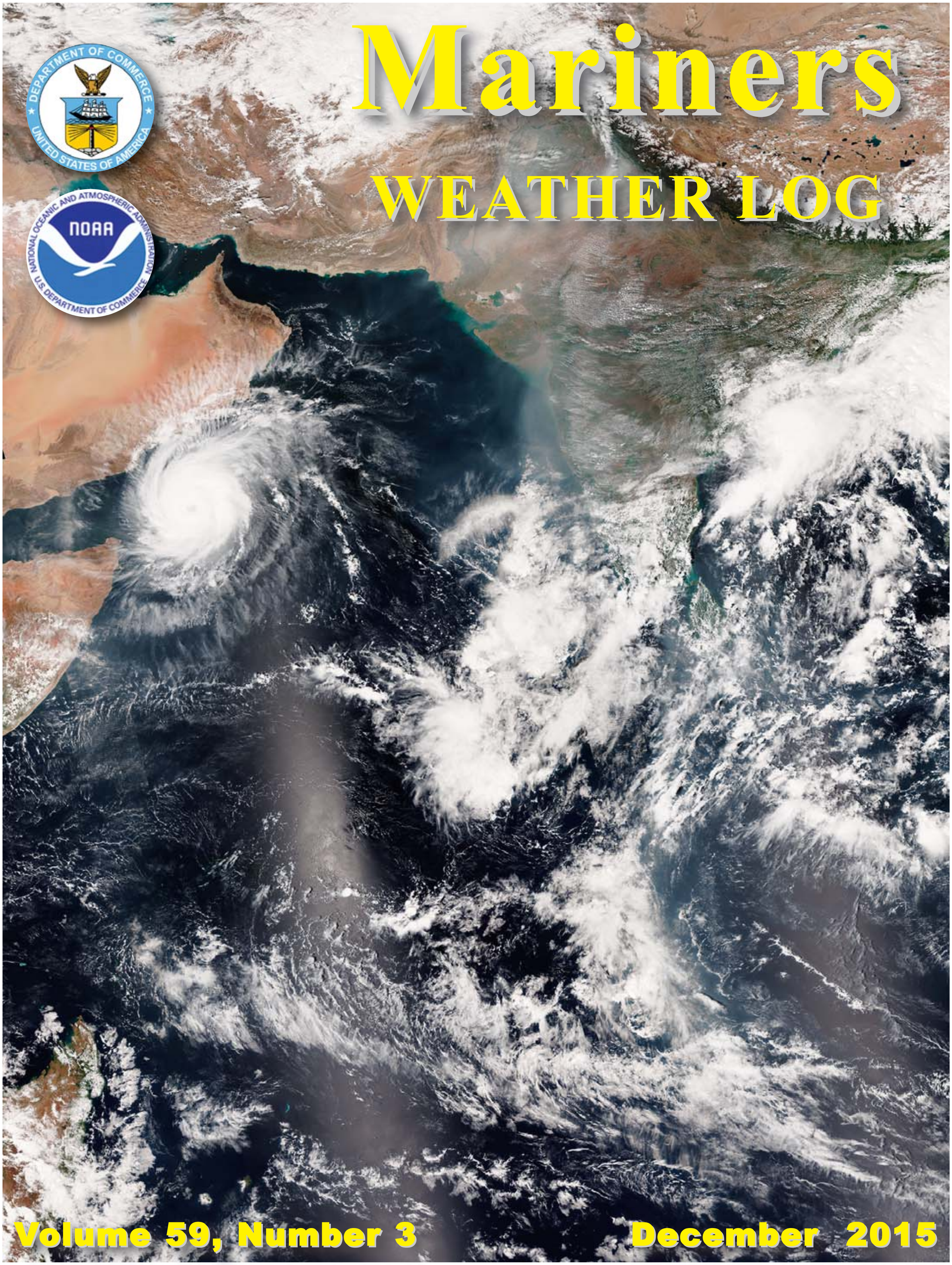
# Mariners
# WEATHER LOG



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# Mariners Weather Log

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## From the Editor

The December issue of the Mariners Weather Log always seems to creep upon me giving me a feeling of astonishment that another year has come to pass.  It goes by so quickly! It is my hope that those of you reading this magazine and your loved ones, have had a fruitful, safe and overall happy year.

2015 produced unprecedented weather events worldwide; which only solidifies our quest for good quality data from our VOS participants. Climate change is the suggested culprit, but without in-depth analysis of our atmosphere and oceans this is only speculation. As part of the VOS program, the data that you transmit from your ships across the globe provide analysts with the capability to give some insight on these rare events that are becoming more commonplace and learn how we can become better stewards of our Earth. We had record breaking snowfall and brutal record low temperatures in the northeast portion of the USA. In March, there were four simultaneous tropical cyclones in the southern hemisphere. Two of these made landfall in Australia and one devastated Vanuatu. Chile's Atacama Desert, one of the driest places in the world received an unprecedented torrential rain, which resulted in the flooding of the Copiapo River and claiming at least nine lives; the worst rain disaster experienced there in 80 years. I think you get the picture. So keep those observations coming and please know that we so appreciate your time and effort. Your observations really do matter!

Staying on topic, we have an article giving an overview on the Arabian Sea, Yemen; two tropical cyclones back to back leaving a path of destruction in their path.

I would like to give a warm and much anticipated welcome to our newest Port Meteorological Officer, Rusty Albaral. Rusty will be taking care of the New Orleans area of responsibility. With this hail, we must say farewell to one of our international colleagues, Graeme Ball, who has retired from his service at the Bureau of Meteorology, Australia. Thank you Graeme and good luck!

Now go grab yourself a cup of tea, or perhaps some eggnog and settle in for another issue of the Mariners Weather Log.

Have a safe Holiday Season - Paula

**On the Cover:** Cyclone Chapala  November 1, 2015, Image Courtesy NOAA View Data Imagery, Environmental Visualization Laboratory
http://www.nnvl.noaa.gov/

# Mariners Weather Log

**Volume 59, Number 3, December 2015**

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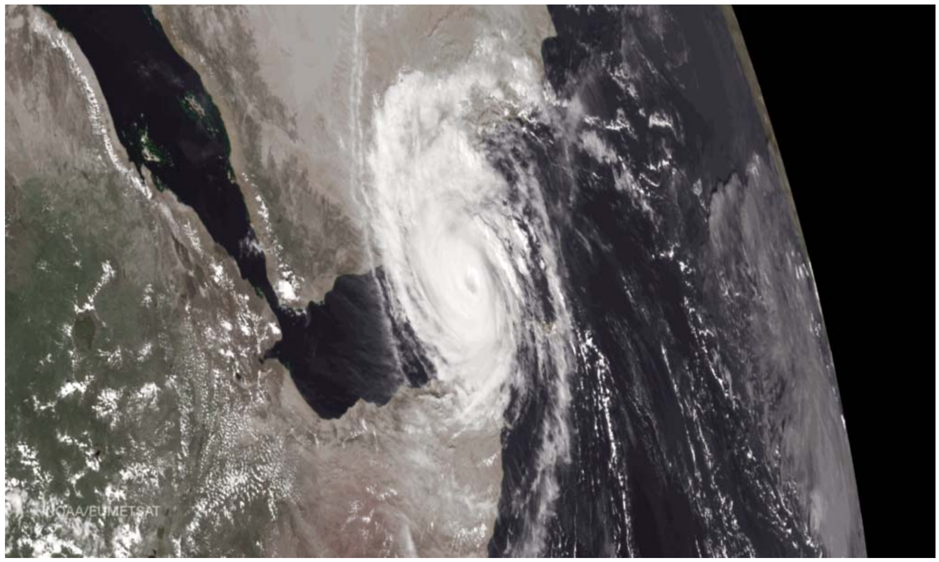
# Yemen Sees Unprecedented Tropical Cyclone Double-Whammy

*By Andrea Thompson*
*Senior Science Writer for Climate Central*

This year's hurricane season in the Arabian Sea was already one for the books, thanks to just one storm, Cyclone Chapala. This cyclone became one of the strongest ever recorded there and the first hurricane-strength storm known to make landfall in Yemen this past November 3nd, 2015.




**This photo shows a high definition visual of Cyclone Chapala November 1, 2015. Chapala made landfall on Tuesday November 2nd west of Mukalla. Right behind it you can see the formation of Cyclone Megh, which will make a direct hit on Yemen's Socotra Island November 8th and make a final landfall in mainland Yemen on November 10th. (Image: NOAA/EUMETSAT)**

Now the arid country has had an unprecedented back-to-back strike, as Cyclone Megh made landfall near the major port city of Aden early Tuesday morning, November 10th.

This marked the first time storms in such quick succession have been recorded in the Arabian Sea at this time of year. The unheard-of activity may have received a boost from El Niño and recent research has suggested that both changing levels of air pollution and climate change could alter tropical cyclone activity in the region.

While Megh wasn't as strong as Chapala when it made landfall, having weakened to tropical storm strength, it was still expected to dump considerable rains on the region. As the up to 24 inches of rain Chapala dumped in some areas made clear, such rains can lead to extensive, dangerous flooding in such a dry landscape.

Megh formed just two days after Chapala slammed into Yemen, a considerable surprise given how few storms the Arabian Sea region typically sees. The basin may only see one or two tropical cyclones in a whole year, compared to other basins, which range from five to more than 20 in an average season. (Tropical cyclone is the generic term for hurricanes, typhoons and cyclones, different names for the same phenomena.)

Cyclones are less common in the Arabian Sea than in other ocean basins because, despite very warm waters that would otherwise provide ample fuel for storm convection, winds in the region are generally hostile, cutting off storm formation and development.

If storms do form, they tend to do so before or after the summer monsoon season, when wind shear — winds moving at different directions at different levels of the atmosphere — is at its worst.

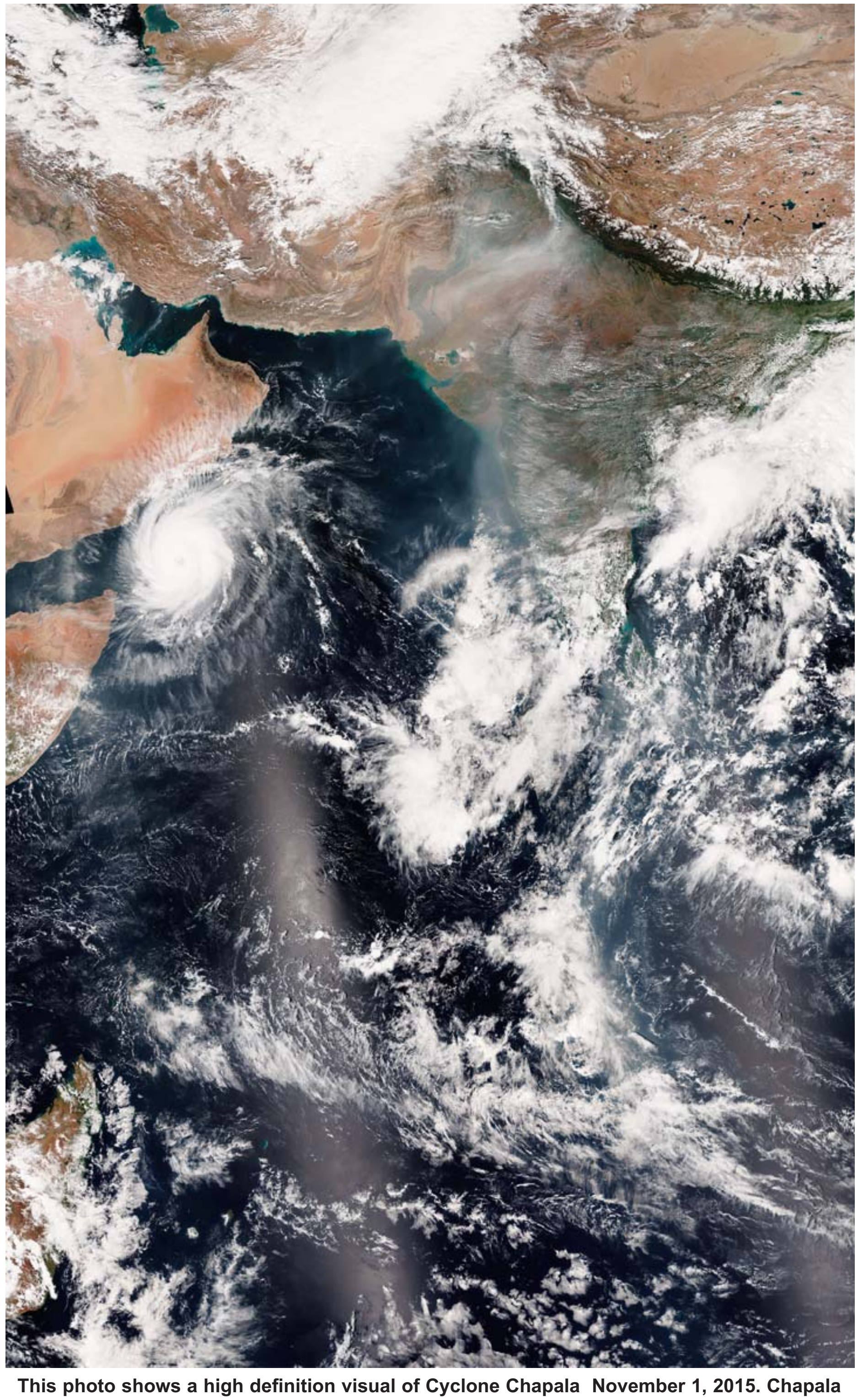
So the timing of Chapala and Megh isn't unusual, but the short time between one storm and the other hasn't been seen in the historical record, with high-quality data going back to 1990.

"In the historical record we've never seen two tropical cyclones spin up, especially one after the other, during this time of year," Amato Evan, an atmospheric scientist at the Scripps Institution of Oceanography, said in email.

At its peak strength, Chapala had winds of about 155 mph, equivalent to a Category 4 hurricane. By wind speed, it was the second strongest storm ever recorded in the region, behind Cyclone Gonu in 2007. (By another measure, which takes into account a storm's winds over its entire lifetime, Chapala was the strongest.)

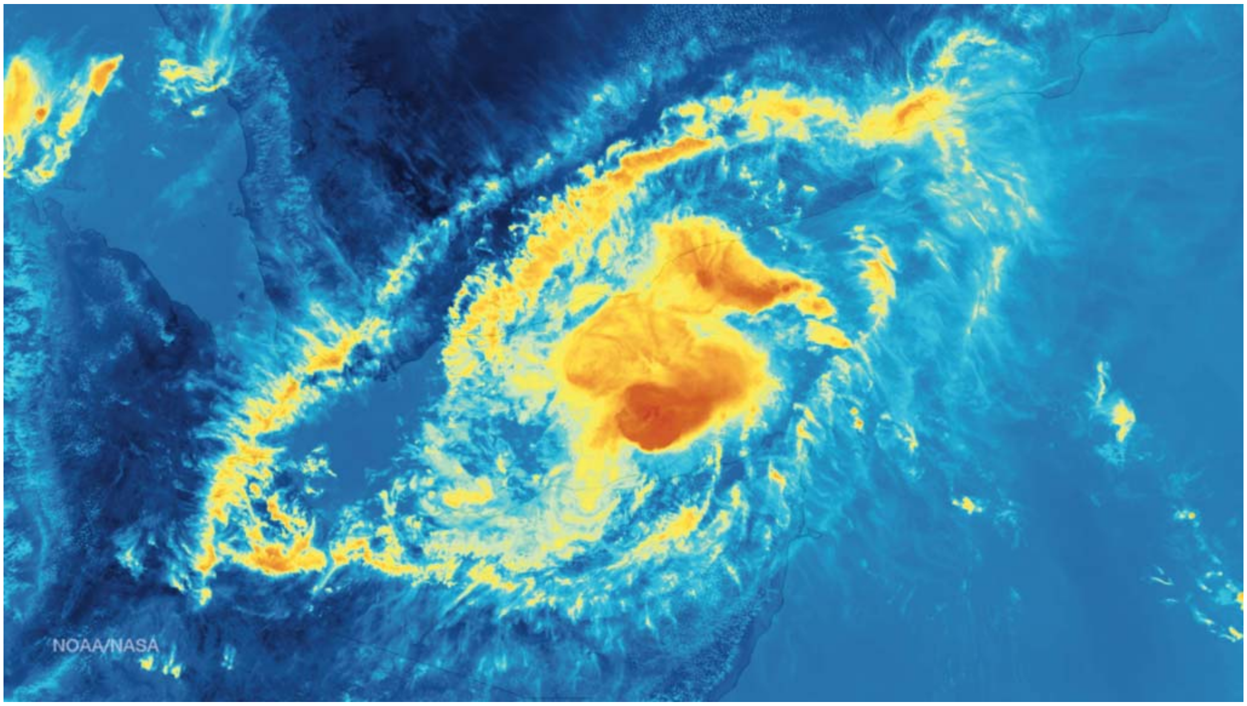
Chapala was able to reach such heights because it happened to encounter a particularly favorable environment, with wind patterns that actually encouraged its development. That let the storm take advantage of ocean waters with unusually high temperatures, even for the always-warm Arabian Sea.

Megh has also benefited from this conducive environment, though waters along its path weren't quite as warm, thanks to the relatively cooler waters Chapala left in its wake, and it topped out Category 3 strength.



**This photo shows a high definition visual of Cyclone Chapala November 1, 2015. Chapala made landfall on Tuesday November 2nd west of Mukalla. Right behind it you can see the formation of Cyclone Megh, which will make a direct hit on Yemen's Socotra Island November 8th and make a final landfall in mainland Yemen on November 10th This is a photo taken from NOAA View Data Imagery, Environmental Visualization Laboratory**
**http://www.nnvl.noaa.gov/**

One reason winds may have been so favorable for both storms could be El Niño, the force that seems to behind so many trends this year. Monsoon winds in the region tend to be weaker during an El Niño, Suzana Camargo, a hurricane researcher at Columbia University's Lamont-Doherty Earth Observatory, remarked in an email. "It's not clear, though, if we can obviously blame these storms on El Niño, as it would be important to do a more in-depth analysis, but that's my suspicion," she said.




**This infrared image was taken by Suomi NPP satellite's VIIRS instrument around 1005Z on November 9, 2015 (Image: NOAA/NASA)**
**tropical cyclone, Megh, Yemen, Oman, Gulf of Aden, NPP, VIIRS, 2015.11.09**

These same conditions have also allowed for the development of another storm, in the Bay of Bengal. The last time there were storms in both areas simultaneously was 2010, hurricane researcher Philip Klotzbach, of Colorado State University, told Forbes.

Megh took a slightly more southerly path than Chapala, brushing the coast of Somalia as it headed toward landfall. That interaction with land, as well as dry air from the Arabian Peninsula, weakened the storm before it hit Yemen.

Reports about damage in the Aden area will likely take time to fully emerge, though the reinsurance firm Aon Benfield cited reports of widespread flooding and damage and at least two deaths on the island of Socotra, which was also hit hard by Chapala.

Rain and flooding are major concerns again with Megh as Yemen typically only sees about 2 inches of rain in a year. Chapala's rains caused severe flooding in and around Mukalla — the impact was visible from satellites observing from space, which saw floodwaters near the coast and numerous wadis, or ephemeral streams, flush with water.

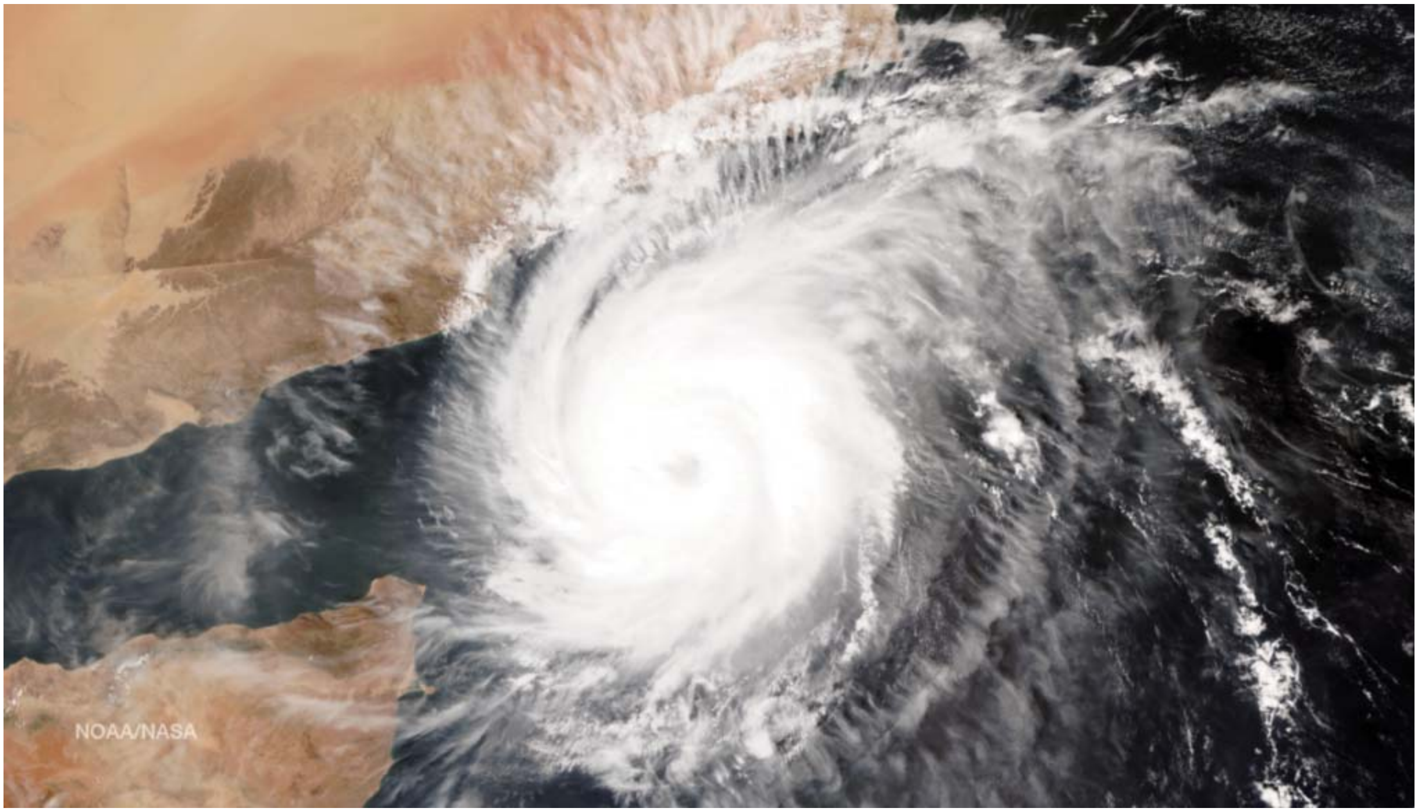
Arabian Sea cyclone activity has generally received much less attention from researchers than busier basins, but this season could change that.

"This year will probably raise my interest in this area again," said Camargo, who along with Evan conducted a survey of activity in the region in 2011.

Of the research that has been done, there are some potential forces that could be at play to allow for stronger Arabian Sea storms. Another study that involved Evan suggested that increased aerosol pollution could be allowing for more intensification of Arabian Sea storms.

"In the paper we speculated that the very thing we have right now (very strong cyclones occurring during the post-monsoon season) would be possible in the future as a result of increased pollution and lower wind shear," Evan said.

Other research has suggested that climate change could lead to an increase in cyclone activity in the Arabian Sea, but a decrease in the Bay of Bengal. Research on such potential links is limited and requires further study, Camargo said.



Tropical Cyclone Chapala November 1, 2015 (Image: NOAA/NASA)

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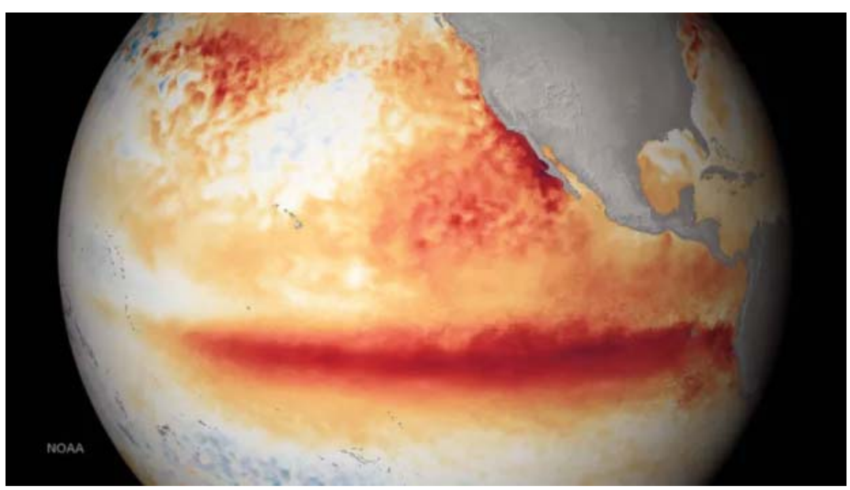
# Strong El Niño Continues



(Image: NOAA)

This image shows the satellite sea surface temperature departure for the month of October 2015, where orange-red colors are above normal temperatures and are indicative of El Niño. This event is forecast to continue through the winter, likely ranking as one of the top three (3) strongest events since 1950, before fading in late spring or early summer. El Niño has already produced significant global impacts, and is expected to affect temperature and precipitation patterns across the United States during the upcoming months. Seasonal outlooks generally favor below-average temperatures and above-median precipitation across the southern tier of the United States, and above-average temperatures and below-median precipitation over the northern tier of the United States.

# WANTED: Freezing Spray and Icing Observations

Environment Canada

## Freezing Spray Project

*National Oceanic and Atmospheric Administration • Environment Canada*

***Ever experience freezing spray conditions on your vessel?***

***Report it!***

**Send us your observation:**
**Date & Time**
**Latitude & Longitude**
**Icing conditions**
**Air temperature**
**Sea conditions**
**Wind conditions**
**Past Experiences**

**Ice accumulated on NOAA Ship OSCAR DYSON**
**Photo credits: NOAA Office of Marine and Aircraft Operations**

Freezing spray is an important safety issue in coastal Canadian and United States waters. In an effort to improve freezing spray forecasts, NOAA and Environment Canada are teaming up to evaluate each country's freezing spray forecast models and tools. Analysis of freezing spray cases, forecaster feedback, and ship observations will allow Environment Canada and NOAA scientists and forecasters to better predict dangerous freezing spray conditions to protect life and property at sea.

***The success of this study depends on you:***
***Whenever possible, please report icing conditions to NOAA and Environment Canada***
***Send reports online :***

**http://go.usa.gov/WYbm**

## The Freezing Spray Project

For many mariners, the threat of freezing spray is treated very seriously. The combined forces of the ocean, wind, and cold temperatures can result in a very dangerous situation for vessels caught up in the elements. When these forces work together under the right conditions, ice accretion can reduce a vessel's stability and the results can be devastating. The fishing vessel **LADY OF GRACE** was one such example where ice accretion caused the vessel to capsize, killing all four people aboard in 2007.

The National Weather Service (NWS) and Environment Canada (EC) routinely forecast freezing spray conditions between October and March in the higher latitudes. James Kells, Senior Marine Forecaster with the NWS's Ocean Prediction Center, stated, "The hazard created by freezing spray is a common occurrence during the cold weather months in the high latitudes." Last year alone, the National Weather Service issued over three thou-sand freezing spray warnings.
Because of the life threatening conditions and the complexity of freezing spray forecasting, EC and the NWS teamed up to understand how these conditions are being forecasted and are looking for ways to improve.

To date, this joint collaborative effort has succeeded in modifying the Overland model (Overland 1990) and has introduced different models, such as Sawada (nomogram) and the Modified Stallabrass model (Stallabrass 1980) to forecasting offices. Each model handles the physics of freezing spray differently. For example, Overland was developed to forecast categorical icing rates (light, moderate, severe) and has a sensitivity to low sea surface temperatures and is highly driven by changes in air temperature. Stallabrass requires additional weather parameters such as wave and relative humidity information and uses a vessel's speed and height to calculate spray flux, an important parameter that includes how the spray freezes onto a vessel's structure. Having each of these models available and understanding the inputs broadens a forecaster's perspective and gives them more options to consider before making their predictions.

The project is also making efforts to compare and understand the strengths and weaknesses of these existing models. To do this, forecasting tools have been developed that allow forecasters to visualize the differences between models within the Graphical Forecast Editor that is used by every NWS office. The guidance provided by the existing freezing spray models can now be easily displayed and compared. They can also be saved in order to investigate events that may be recorded later.

The difficult situation we are in now is verifying the models and our forecasts. This is usually a straightforward process because many vessels provide meteorological observations. However, during the course of this project, NOAA and EC quickly realized that most mariners heed freezing spray warnings and stay tied up at the pier or they do not report it. Without observations, our ability to improve the current forecasting capabilities is limited.

To thoroughly evaluate the different computer models that predict freezing spray, the team needs to know what conditions actually developed during icing events. Every observation submitted during this study will provide critical insight into model performance, strengths and weaknesses. Each observation is a step towards enhancing the ability of each agency to protect life and property at sea.

The success of this project depends on you and the entire maritime industry: whenever possible, please report icing conditions to NOAA and Environment Canada!

**To submit an observation, please visit**

**http://go.usa.gov/WYbm**

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# Estimating Wave Height Using Wind Speed during a Tropical Cyclone

*Professor S. A. Hsu*
*Louisiana State University*
*Email: shihahsu@outlook.com*

**Abstract:** Analysis of wind and wave measurements from five NDBC data buoys during three hurricanes and one typhoon indicates that the significant wave height is approximately 30 percent of the wind speed at 10 meters. This 30% rule between wave height and wind speed should be useful for mariners as a safety guide during tropical cyclones.

## 1. Introduction

The wave height used in this study is the significant wave height, $H_s$, which is defined as the average height of the highest one-third of the waves observed at a specific point (see, e.g., Hsu, 1988). This parameter is very useful because it is approximately equal to the wave height that a trained observer would visually estimate for a given sea state (e.g. Bishop, 1984). During wind seas when the effect of swell is negligible, Carter (1982) developed the following equations for duration and/or fetch limited seas (see also, Taylor and Yelland, 2001) that
for fetch limited seas,

$$H_s = 0.0163X^{0.5}\, U_{10}, \qquad (1)$$

$$T_p = 0.566X^{0.3}\, U_{10}^{0.4}, \qquad (2)$$

And for duration limited seas,

$$H_s = 0.0146D^{5/7}\, U_{10}^{9/7}, \qquad (3)$$

$$T_p = 0.540D^{3/7}\, U_{10}^{4/7}, \qquad (4)$$

The sea is considered fetch limited if

$$D > 1.167\, X^{0.7}\, U_{10}^{-0.4}, \qquad (5)$$

Where $H_s$ is the significant wave height in meters, $T_p$ is the dominant wave period in seconds, $U_{10}$ is the wind speed at 10 meter in meters per second, $X$ is the fetch in kilometer, and $D$ is the duration in hours.

Because both fetch and duration parameters are not normally available, it is the purpose of this study to simplify aforementioned equations during tropical cyclones. Furthermore, operational formulas will be provided so that rapid estimation of $H_s$ from $U_{10}$ may be made.

## 2. Data Analysis and Results

Because the parameter of fetch is not available routinely, we first eliminate it from **Equations (1)** and **(2)**, and get,
For fetch limited seas,

$$U_{10} = 13413H_s^3 / T_p^5, \qquad (6)$$

Similarly, for duration limited seas by eliminating the duration parameter from **Equations (3)** and **(4)**,

$$U_{10} = 14754H_s^3 / T_p^5, \qquad (7)$$

According to Drennan et al (2005), a wind sea is defined when

$$H_s / L_p \geq 0.020, \qquad (8)$$

$$L_p = (g/2\pi)\, T_p^2 = 1.56T_p^2 \qquad (9)$$

Here $L_p$ is the dominant wave length and $g$ is the gravitational acceleration. Note that the parameter $H_s / L_p$ is called wave steepness.

Now, we can investigate the relation between $H_s$ and $T_p$. During Hurricane Katrina over Buoy 42040 (from 0200UTC on 27 thru 1400UTC on 30 August 2005), an extreme wave height of 16.91m (55ft) was recorded by the National Data Buoy Center (NDBC) (www.ndbc.noaa.gov). Using the criteria as set in **Equations (8)** and **(9)** during the passage of Katrina near 42040, one can plot $H_s$ against $T_p$ as shown in **Figure 1**.

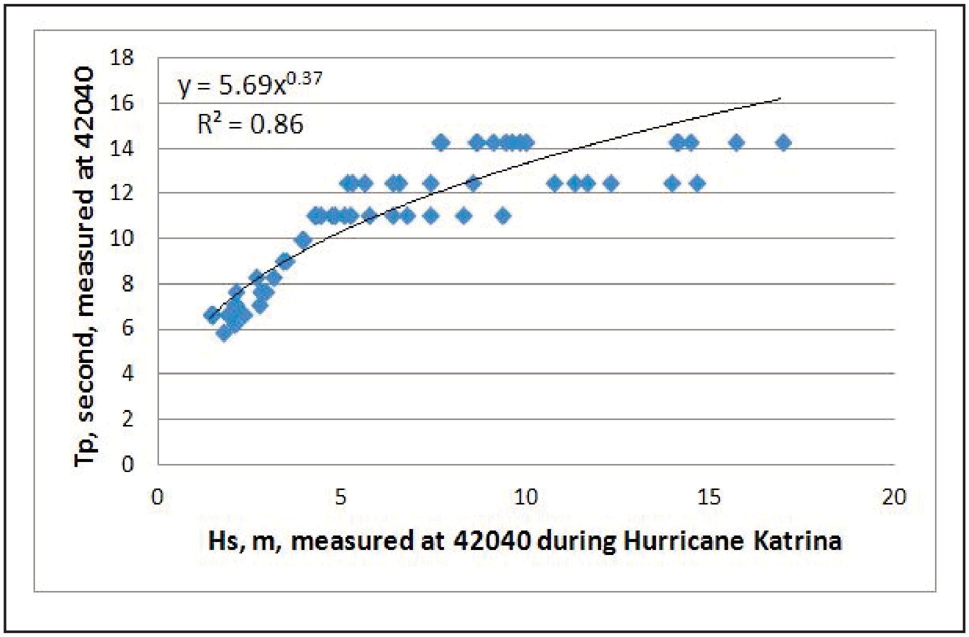


**Figure 1. Relation between $T_p$ and $H_s$ at NDBC Buoy 42040 during Hurricane Katrina.**

It is found that 86 percent of the relation between $H_s$ and $T_p$ can be explained by a power law (since the coefficient of determination, $R^2 = 0.86$). Because the exponent of this power law relation, which is 0.37, is very close to 0.40, we may replace it by 0.40. Our analysis is provided in **Figure 2**, which shows that,

$$T_p = 5.35\ H_S^{0.4}, \qquad (10)$$

**Equation (10)** should be useful, if the correlation coefficient, $R = 0.88$, is acceptable.

Substituting **Equations (10)** into **(6)** and **(7)**, respectively, we have,
For fetch limited seas,

$$H_s = 0.33\ U_{10} \qquad (11)$$

And for duration limited seas,

$$H_s = 0.30\ U_{10} \qquad (12)$$

In this study, four datasets (including three hurricanes and one typhoon) are analyzed. They are Hurricane Kate at Buoy 42003 (from 1600UTC on 18 thru 2300UTC on 21 in November 1985), Hurricane Ivan at 42003 (from 0100UTC on 13 thru 1100UTC on 16 in September 2004), Hurricane Katrina at 42003 (from 0400UTC on 26 thru 0500UTC on 28 in August 2005), and Typhoon Russ at 52009 near Guam (from 0100UTC on 16 thru 1400UTC on 20 in December 1990). Note that, while the anemometer at Buoy 42003 was located at 10m, the anemometer at Buoy 52009 during Typhoon Russ was located at 5m. Therefore, the wind data from 52009 were corrected from 5 to 10m using the logarithmic wind profile law (Hsu, 1988) and the roughness length parameterization based on Taylor and Yelland (2001). Our results are presented in **Figure 3**.

## 3. Conclusions

Since our result shown in **Figure 3** is identical to **Equation (12)**, it is concluded that the significant wave height can be estimated linearly from the wind speed. Furthermore, although the difference between **Equations (11)** and **(12)** is about 9%, which is within the 10% composite margin of error in wind measurements at sea according to NDBC, **Equation (11)** may also be employed for safety reasons.


## Acknowledgements

Buoy measurements provided by NDBC are greatly appreciated.

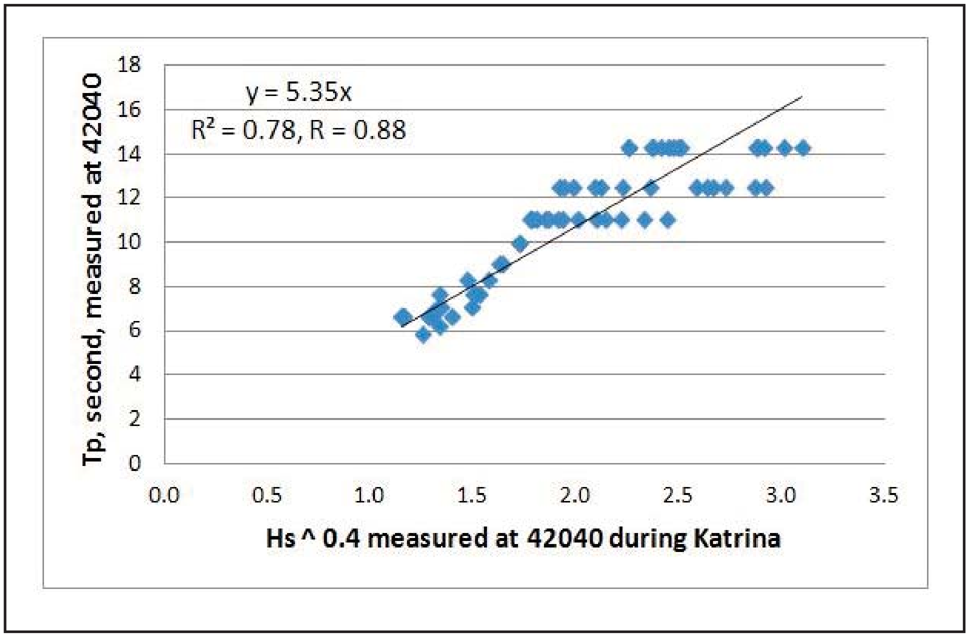


**Figure 2. Relation between $T_p$ and $H_s^{0.4}$ at 42040 during Katrina.**

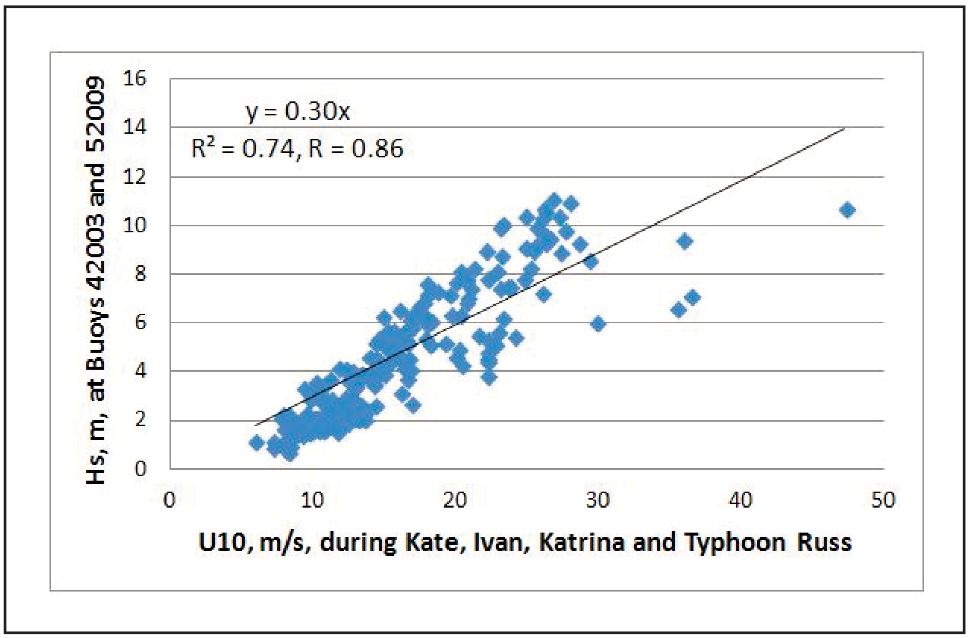


**Figure 3. Relation between $H_s$ and $U_{10}$ during Hurricanes Kate, Ivan, Katrina and Typhoon Russ.**

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# Shipwreck: ONOKO

*By Skip Gillham*


**ONOKO – courtesy: Historical Collections of the Great Lakes**

## ONOKO: Lost on Lake Superior 100 Years Ago

The iron-hulled bulk freighter **ONOKO** was built at Cleveland, Ohio, by the Globe Iron Works. It was launched at their shipyard on Feb. 16, 1882, and was hailed as the first ore boat of this type on the Great Lakes and, at 302 ft, in overall length, the largest ship to ever ply the inland seas to that date.

**ONOKO** was built for the fleet of Philip Minch and was soon an active carrier setting new standards for cargo transportation. The ship sailed for Chicago on April 19, 1882 and loaded 2,536 tons of coal there for a Lake Superior port. There the ship took on about 88,000 bushels of wheat for Buffalo.

As late as 1887, **ONOKO** was still setting records with a load of 3,048 tons of iron ore moving through the Soo Locks in a single trip. It also had the largest cargo through these same locks in 1888 but the tonnage was down to only 2,849 for that trip.

Tragedy, due to heavy fog on Lake Michigan off Racine, WI on May 16, 1896, led to a collision between **ONOKO** and the schooner **MARY D. AYER**. Five sailors in the smaller boat perished.

A change in the corporate organization of the company placed **ONOKO** under the banner of the Kinsman Transit Co. in 1905. The ship was transferred to this newly organized fleet and remained in their service for another decade.

A grounding in a snowstorm off Southeast Shoal while carrying coal across Lake Erie, between Point Pelee and Wheatley, ON, on Dec. 1, 1910, interrupted end of year service but the ship was refloated with the aid of three tugs and resumed trading.

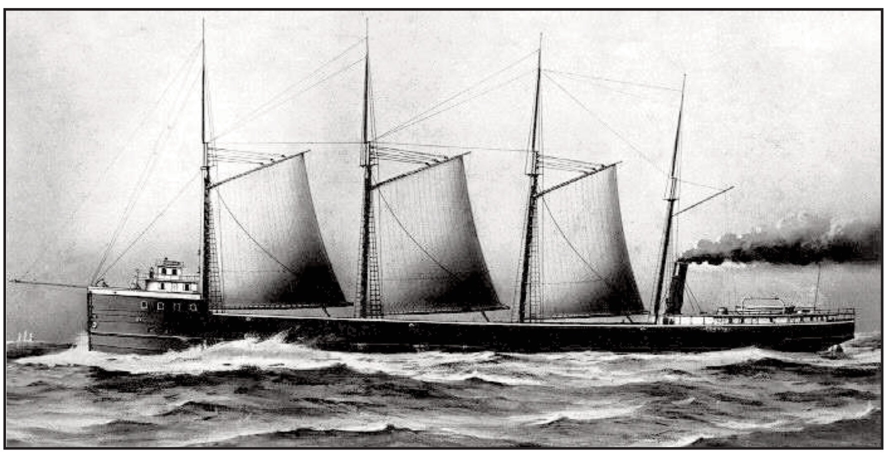
On Sept. 15, 1915, **ONOKO** foundered in Lake Superior, off Knife Island, about 17 miles west of Duluth, MN. It went down stern first in a space of 35 minutes. On board for this final trip was a cargo of 110,000 bushels of wheat that had been consigned to a storage elevator at Toledo, OH.

The explanation for the loss is that one of the hull plates had worked loose and simply dropped off while heading down the lake. The ship had been briefly aground earlier in the month and the suspicion was this weakened one of the plates beneath the engine room.

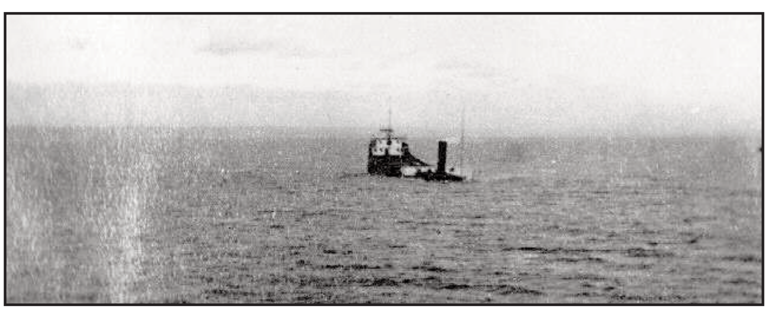
Water rushed in unabated and the crew abandoned their doomed vessel to the lifeboats before it sank in an initially reported 340 ft of water. The loss of the ship and its cargo was noted at $160,000.

Fortunately, the tanker **RENOWN** was nearby and the alert Captain had correctly assessed the situation, turned his ship, and came back to assist. The Standard Oil tanker crew was able to rescue the drifting sailors.

The remains of **ONOKO** were found in 1987. The ship actually rests in only 207 ft of water and is upside down. The hull is broken in two near the stern. This once historic ship remains where it landed a century ago this past fall after a most unusual accident on Lake Superior.



**1920 painting showing port side profile as originally rigged;
Institute for Great Lakes Research archives, Bowling Green State University**



**ONOKO sinking, as photographed by an unidentified seaman on the Standard Oil Tanker, RENOWN, Sep. 15, 1915; Institute for Great Lakes Research archives, Bowling Green State University**

**Special thanks: Images courtesy of Historical Collections of the Great Lakes, Bowling Green State University**
**http://www.bgsu.edu/library/cac/collections/hcgl.html**

**Additional information regarding the ONOKO is available at:**
**http://www.mnhs.org/places/nationalregister/shipwrecks/onoko/onoko.php**

# *Whale Alert:* Free iPad and iPhone App Helps Mariners Avoid Right Whales and Monetary Fines

Collision between whales and ships is a problem that is drawing world-wide attention. From the United States to the Mediterranean to New Zealand, mariners are increasingly being asked to take action to reduce the risk of such collisions, but receive little help in doing so. Led by scientists from the US National Oceanic and Atmospheric Agency's (NOAA) Stellwagen Bank National Marine Sanctuary, a consortium of scientists, industry representatives and conservation groups have developed a solution. ***Whale Alert*** is a free mobile application that provides the maritime community and others with up-to-date information pertaining to North Atlantic right whale management initiatives and regulations, and displays them on nautical charts. NOAA is the United States agency with responsibility for protecting endangered marine species, such as the North Atlantic right whale.

**How can *Whale Alert* Benefit Mariners?**

In US waters, mariners are required to abide by regulatory management initiatives designed to protect the highly endangered North Atlantic right whale (U.S. Law 50CF 224.105). Failure to comply with these regulations can result in substantial fines. To date, NOAA has issued penalty assessments ranging from $11,500 to $92,000 to ships violating speed restrictions in designated Seasonal Management Areas (SMAs). However, it is difficult for mariners to stay updated on management measures and to know when they are in a special management zone. ***Whale Alert*** provides all mariner-relevant right whale information on digital nautical charts and displays them on an iPad or iPhone. Using an iPad to display ***Whale Alert*** has the advantage of keeping information separate from a ship's ECDIS screen, thereby not inferring with navigation and safety. The charts can be automatically updated to ensure that mariners are receiving the most recent information possible. ***Whale Alert*** provides mariners with "one-stop shopping" for all the information they need to comply with measures designed to protect right whales.

**What will Mariners See on *Whale Alert?***

***Whale Alert*** provides mariners with a visual display of all relevant right whale management initiatives on digital nautical charts via their iPad or iPhone, including:

• Current ship location - An icon depicts a ship's real-time GPS derived location;

• Seasonal Management Areas (SMA) – SMAs are ocean areas in which the US Government requires mariners to transit at speeds ≤10 knots. SMAs are active only during specific times of the year when right whales are historically present. SMAs appear on ***Whale Alert*** charts as orange-colored areas and are only displayed during the time period in which the SMA is active. As a ship enters an SMA a pop-up window (triggered by their GPS location) appears notifying the mariner that he/she should be traveling at a speed ≤10 knots;

• Mandatory Ship Reporting (MSR) – MSRs are areas that, when entering, a ship must contact the US Coast Guard to receive right whale information. MSRs are displayed in ***Whale Alert*** as a blue line that boarders the reporting area. When a ship enters an MSR, a pop-up display appears reminding the mariner to report to the US Coast Guard and providing information on reporting procedures;

• Areas to be Avoided (ATBA) – IMO sanctioned ATBAs to protect right whales appear on the ***Whale Alert*** charts in red when and where they are active;

• Recommended Routes (RR) - NOAA has established RRs in key right whale habitats that guide ships through areas with a reduced likelihood of collision with whales. RRs are displayed in purple;
• Dynamic Management Areas (DMAs) – DMAs are ocean areas where an aggregation of right whales has been sighted outside of an SMA. DMAs typically last 2-weeks and mariners are requested to reduce speeds to ≤ 10 knot when transiting. Active DMAs zones are shaded grey on the *Whale Alert* display;
• Near real-time acoustic alerts – Right whale acoustic detection buoys use moored hydrophones and satellite communications to quickly identify the presence of right whales in the TSS through and around NOAA’s Stellwagen Bank National Marine Sanctuary. Detection buoys appear on *Whale Alert* charts as green circles. The circles turn yellow to indicate that a right whale has been detected within the past 24 hrs and a ≤ 10 knot speed is requested;

***Whale Alert*** was designed with considerable input from the maritime community. The Massachusetts Port Authority and Boston Harbor Pilots Association were lead groups, while NYK Line and the Norwegian and Holland America cruise lines were part of a test fleet to gain additional industry input and make the app operational. The US Coast Guard was instrumental in working with the team to transmit information via AIS. On the conservation side, the International Fund for Animal Welfare provided program input and funding. In addition to the Stellwagen Bank National Marine Sanctuary, scientists and engineers from the Bioacoustic Research Program at Cornell University, the Center for Coastal and Ocean Mapping at the University of New Hampshire, NOAA’s Northeast Fisheries Science Center, and the Woods Hole Oceanographic Institution provided expertise supporting different aspects of the app. EarthNC, with extensive experience in spatial mapping and real-time mobile data acquisition, developed the app itself.

**What Else can *Whale Alert* Provide Mariners?**

Sightings of whales can be submitted directly to our ***Whale Alert*** database with the help of the whale ID guide contained in the app.



Real-time NOAA PORTS® (Physical Oceanographic Real-Time System) weather and tide data are displayed.

iPads can easily be configured such that only approved apps can be deployed, thereby assuring safety on a vessel’s bridge. For more information about ***Whale Alert***, including set up requirements and instructions go to whalealert.org To provide feedback and ideas to the *Whale Alert* development team you can fill out a survey at: stellwagen.noaa.gov/protect/survey.html. To obtain the **free** ***Whale Alert*** mobile app go to the App Store or whalealert.org.

⚓

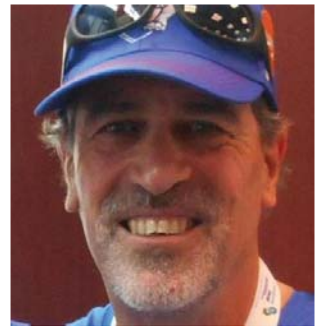
# Hail and Farewell!

## New Orleans has a New Port Meteorological Officer..

Rusty Albaral grew up in the New Orleans area before shipping off to the Marines in the early nineties. Upon completion of Boot Camp and Marine Combat Training, he received orders to the Surface Weather Observation Course at Keesler AFB, Biloxi, MS. After completion of the course and four years of operational weather observing, Rusty then attended the Meteorological and Oceanographic Analyst Forecasting Course back in Biloxi. After graduating from the course, he would go on to complete his 20 year Marine Corps career as a Lead Forecaster, Meteorological & Oceanographic Formal School Instructor, Instructor Supervisor, Commanding General's Staff Meteorologist, Regional Technical Training Supervisor, and Lead Watch Supervisor. Along the way, Rusty deployed to Hungary/Kosovo to support the Kosovo Campaign and deployed to Iraq during Operation Iraqi Freedom. In addition, he was twice awarded the Navy Commendation Medal for meritorious service and the Navy Achievement Medal twice for superior performance. Over the course of his 20 year military weather career, Rusty found his most rewarding tour was being a technical training instructor at the Meteorological and Oceanographic Analyst Forecaster's Course on Keesler AFB. Rusty was designated a Master Training Specialist by the Naval Technical Training Unit, for excellence in technical competence, instructional methodology and military leadership. Upon retiring in 2013, Rusty attended and graduated with an Associate of Arts from Mississippi Gulf Coast Community College and is currently pursuing his Bachelor of Science degree in Applied Computing from Tulane University. In addition to his worldwide experience as an operational weather forecaster, Rusty genuinely enjoys teaching weather observing, forecasting, and weather awareness at any level. During his spare time, he spends as much time as possible on the water with family and friends. When not on the water, Rusty enjoys catching live music and sneaking in 18 holes of golf when he can.

## VOS Says Farewell to an International Colleague

A Fond Farewell to one of our international colleagues, Graeme Ball; Manager, Marine Operations Group at Bureau of Meteorology-Melbourne, Australia. His area of responsibility included the Australian Voluntary Observing Fleet (VOS), XBT Ship of Opportunity Program, Drifting buoys, Profiling floats and Waverider buoys. Graeme Ball retired last month (October 2015) with a long list of accomplishments and an overwhelming list of responsibilities that he handled effortlessly. Graeme began working at the BOM as Manager of the Marine Operations in 1997. His dedication to environmental studies gave way to other opportunities to enhance programs within the field on oceanography and meteorology. In 2002, Graeme became the Chair of JCOMM Ship Observations Team (SOT), an active member to the JCOMM Observations Coordination Group (OCG) and the Chair for the International Buoy Program (IBPIO)for the Indian Ocean (southern Hemisphere). These, I am sure, are only a few of Graeme's accomplishments. Needless to say, his shoes will be hard to fill. In his retirement, Graeme won't be idle as his many interests will keep him and his wife Robyn very busy. Both have a love for travel, and recently have joined an Australian Club for hiking adventures. Along with hiking and bushwalking in the outback, Graeme enjoys kayaking and cycling…and Australian football, which is nothing, like the football in the U.S.A. by the way! His team: GEELONG CATS. Included in all these activities and interests are his grandchildren, family and friends.



Congratulations on your retirement Graeme!

Cheers!

# Mean Circulation Highlights and Climate Anomalies

## May through August 2015

***All anomalies reflect departures from the 1981-2010 base period.***

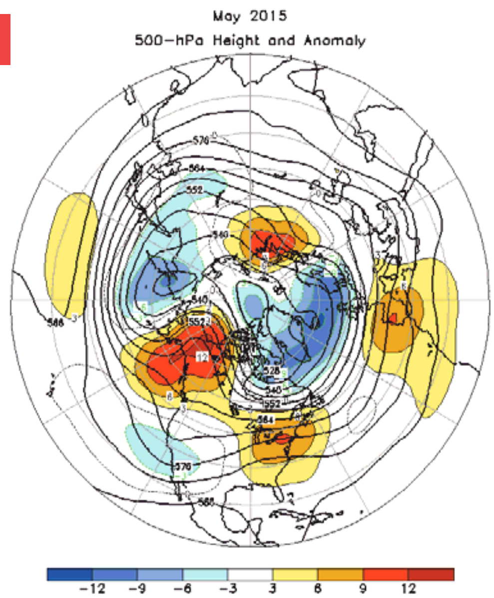
*Anthony Artusa, Meteorologist, Operations Branch, Climate Prediction Center NCEP/NWS/NOAA*

### May-June 2015

During May, the mid tropospheric height and anomaly pattern featured well above average heights across Alaska, the Gulf of Alaska, and western Canada, in association with an amplified ridge. Above average heights were also observed over the eastern contiguous US, the western Mediterranean region, and northwest Russia. Below average heights characterized the far northern reaches of the Atlantic from Baffin Island, Canada eastward across Greenland and Iceland to Scandinavia. Below average heights were also noted in eastern Siberia, near the North Pole, and the southwestern contiguous US, **Figure 1**. The Sea Level Pressure (SLP) and Anomaly map for May (**Figure 2**) roughly mirrored the 500 hPa circulation features. In June, the 500 hPa flow pattern featured above average heights from the Bering Sea southeastward to the US Rockies, and western Russia (**Figure 3**). The only area with significantly below average heights was Scandinavia. The Sea Level Pressure and Anomaly map for June (**Figure 4**) shows a very weak, nondescript pattern, with below average SLP for northern Scandinavia and the adjacent arctic coast of northwest Russia.

Arctic sea ice extent was 5.5 percent below the 1981-2010 average in May 2015. This is the third smallest May sea ice extent since satellite records began in 1979. In contrast, Antarctic sea ice extent was 12.1 percent above the 1981-2010 average, making this the largest May sea ice extent on record (**Reference 1**).

1

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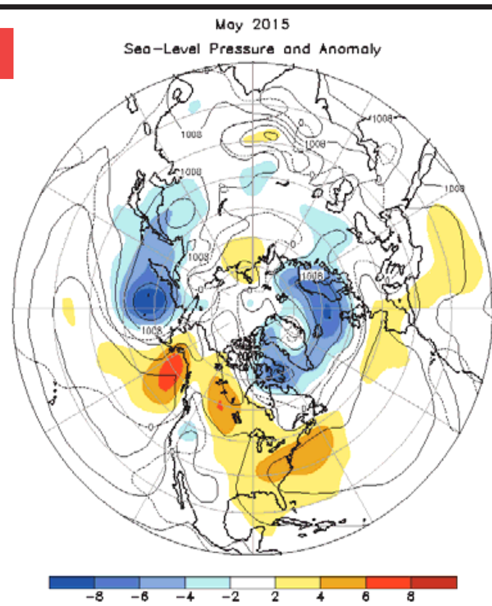
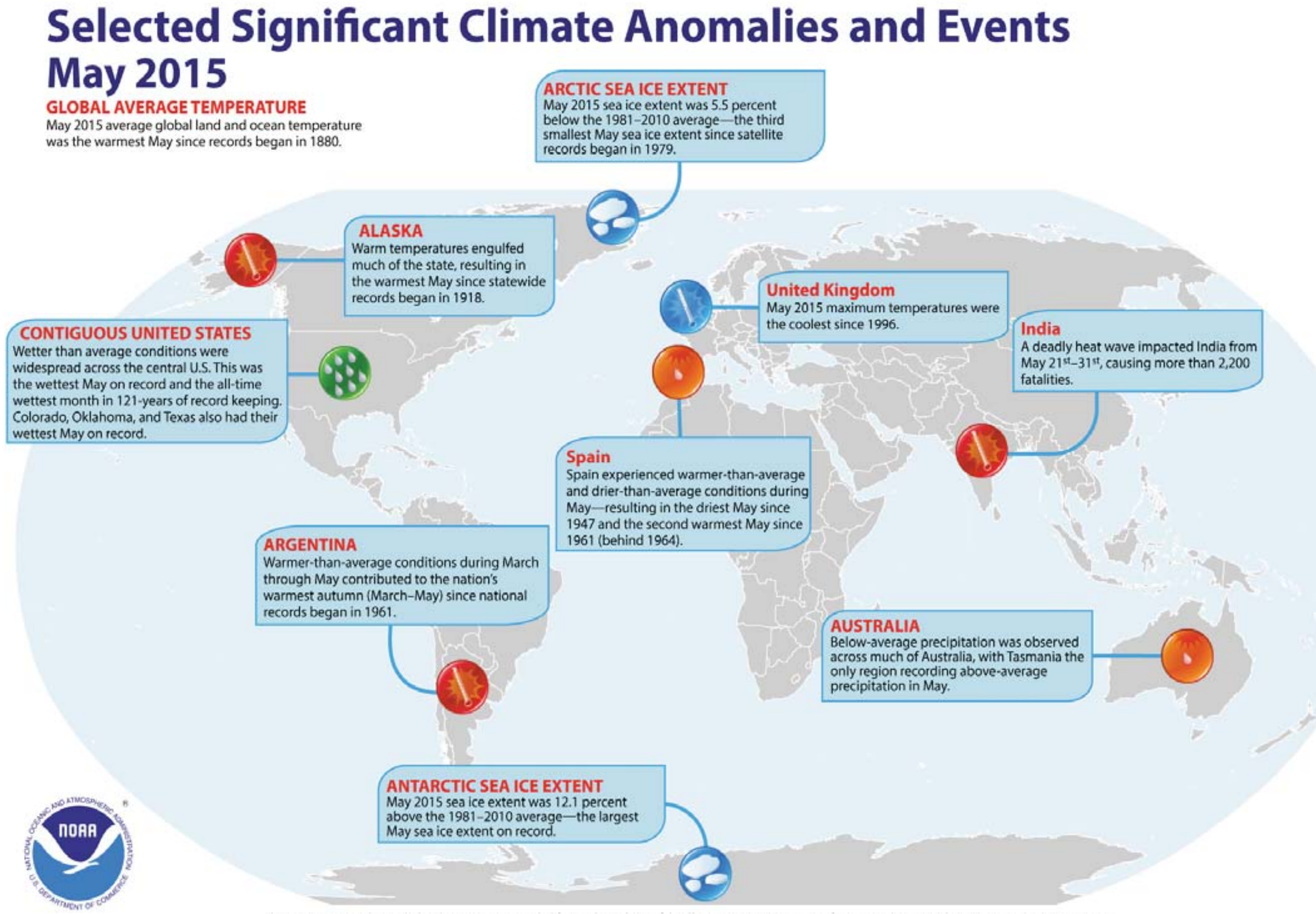
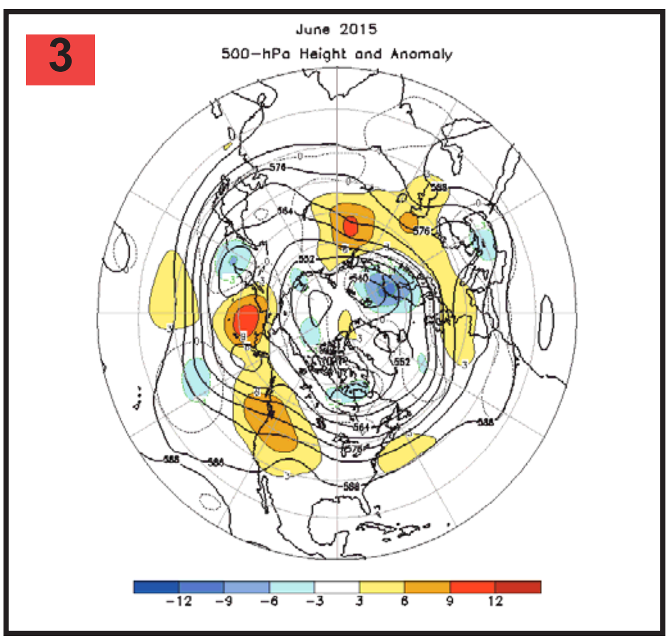


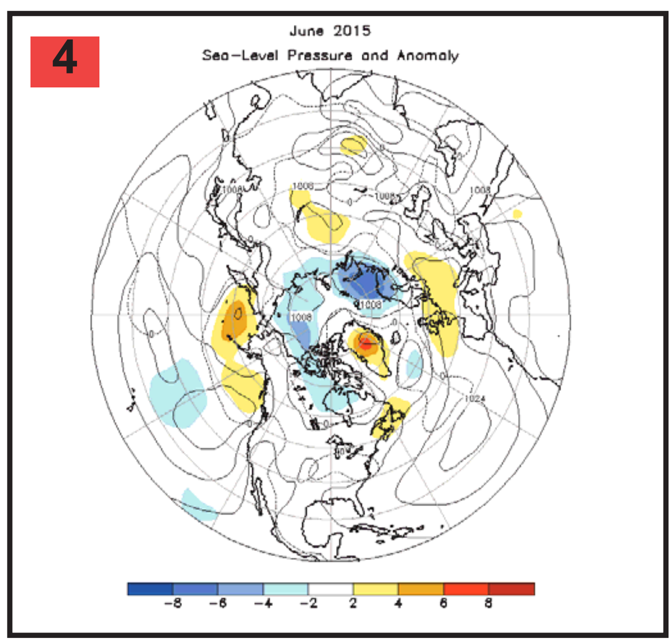

Caption for 500 hPa Heights and Anomalies: Figures 1,3,5,7
Northern Hemisphere mean and anomalous 500-hPa geopotential height (CDAS/Reanalysis). Mean heights are denoted by solid contours drawn at an interval of 6 dam. Anomaly contour interval is indicated by shading. Anomalies are calculated as departures from the 1981-2010 base period monthly means.

Caption for Sea-Level Pressure and Anomaly: Figures 2,4,6,8 Northern Hemisphere mean and anomalous sea level pressure (CDAS/Reanalysis). Mean values are denoted by solid contours drawn at an interval of 4 hPa. Anomaly contour interval is indicated by shading. Anomalies are calculated as departures from the 1981-2010 base period monthly means.




**Material provided in the above map was compiled for NOAA's State of the Climate report.**
**For more information visit: http://www.ndbc.noaa.gove/sotc (Reference 1)**

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## The Tropics

During May and June, sea surface temperatures (SSTs) were above average across the equatorial Pacific. The monthly Nino 3.4 indices were +1.0C (May) and +1.3C (June). The depth of the oceanic thermocline (measured by the depth of the 20C isotherm) was above average in the eastern equatorial Pacific (May and June), and the east central Pacific (May). Corresponding sub surface temperatures ranged from 1-6C above average during the 2 month period. Low level (850 hPa) westerly wind anomalies and upper level (200 hPa) easterly wind anomalies continued across the equatorial Pacific in May, and the western and central Pacific in June. Convection was enhanced in the central and eastern Pacific during both months, suppressed across Indonesia in June.

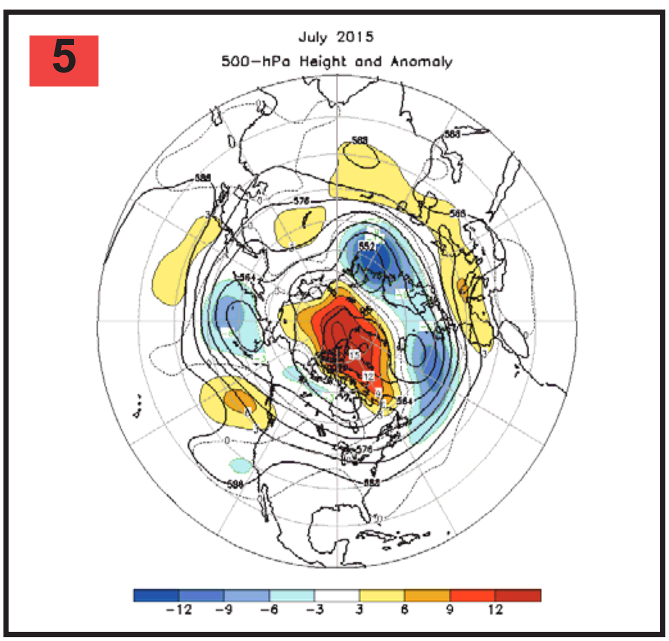
## July-August 2015

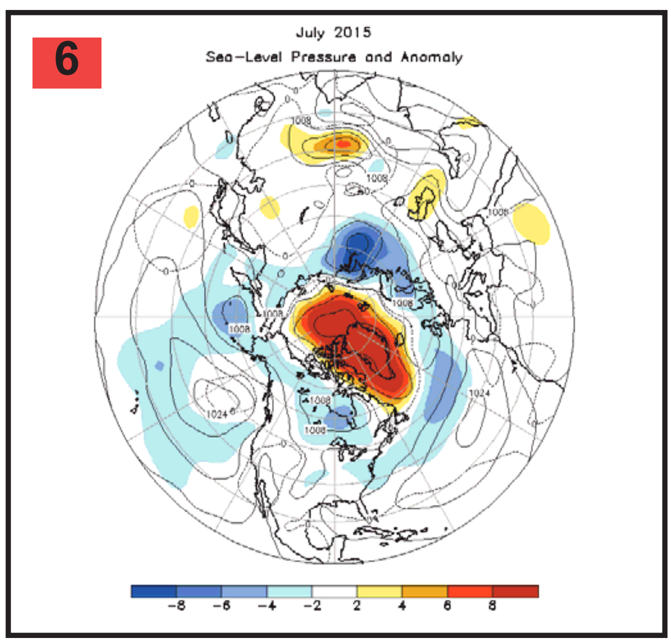
The July 2015 mid tropospheric circulation pattern was characterized by well above average 500 hPa heights across most of the Arctic Ocean and Greenland. Well below average heights were analyzed from the northeast North Atlantic across northern Europe to northwest Russia. Below average heights were also noted over the Bering Sea and adjacent far northern Pacific (**Figure 5**).

The SLP and Anomaly pattern (**Figure 6**) for July generally shows anomalies of the same sign as those of the 500 hPa pattern. In August, the mean circulation was characterized by a wave number 5 pattern, though the ridge-trough couplet over the United States had very small anomalies. Above average 500 hPa heights extended from the North Pole southward across central and eastern Europe, east Asia, the Bering Sea and Gulf of Alaska, and over northern Canada. Below average heights were noted across the northeast Atlantic, north central Russia, the temperate western Pacific, and from the northern coast of Alaska southeastward into western Canada (**Figure 7**). The SLP and Anomaly map (**Figure 8**) roughly mirrors the 500 hPa pattern.

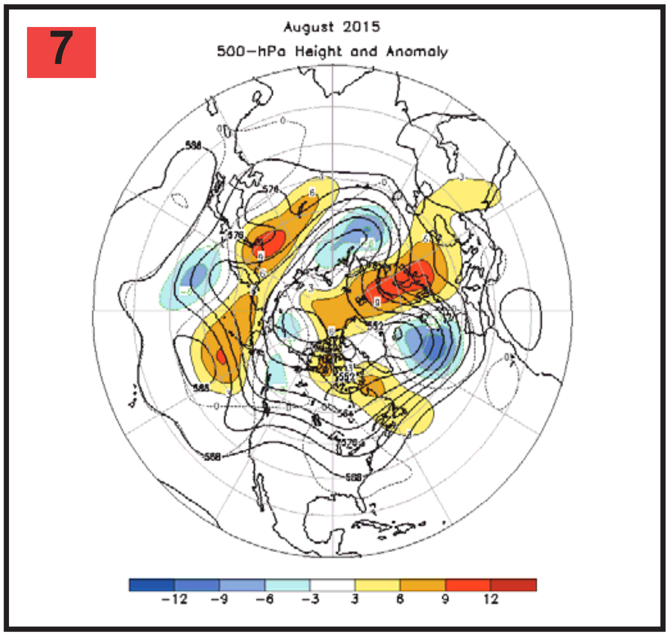
## The Tropics

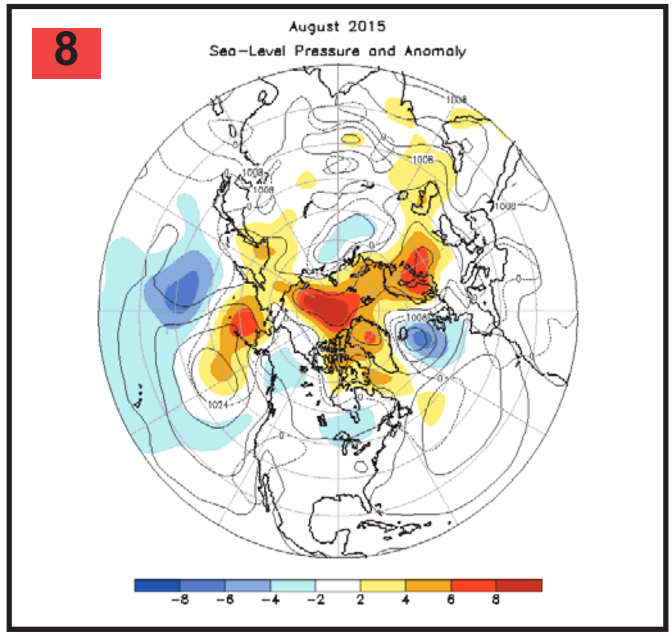
SSTs across the equatorial Pacific continued to be above average during July and August. The monthly Nino 3.4 indices were +1.6C and The depth of the oceanic thermocline was above average in the eastern equatorial Pacific during the two month period, and sub surface temperatures ranged from 1-6C above average. Low level westerly's (850 hPa) and upper level easterlies r (200 hPa) remained strong across the western and central Pacific during the period. Deep tropical cloudiness and related thunder



storm activity remained enhanced over thecentral and eastern equatorial Pacific, and suppressed over Indonesia and the western Pacific. Collectively, these oceanic and atmospheric anomalies are consistent with El Nino conditions.

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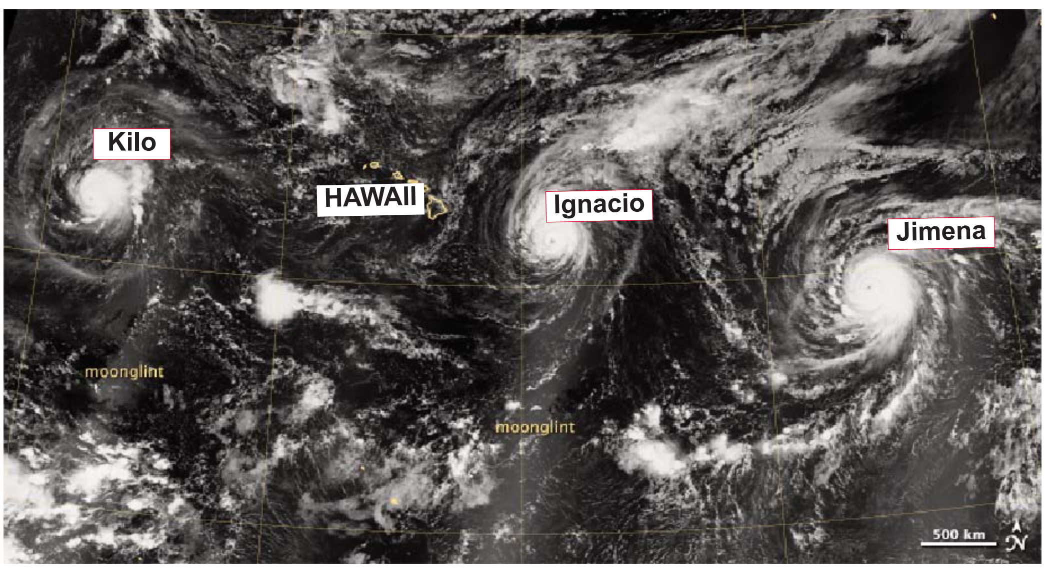


**An unprecedented three Category 4 hurricanes occurred on the same date (August 29, 2015) in the central and eastern tropical Pacific - Kilo, Ignacio and Jimena (Image/NASA) (Reference 2)**

## References:

1. http://www.ncdc.noaa.gov/sotc/service/global/extremes/201505.gif

2.http://eoimages.gsfc.nasa.gov/images/imagerecords/86000/86512/three stormsnight_vir_2015242.jpg

Much of the information used in this article originates from the Climate Diagnostics Bulletin archive:

(**http://www.cpc.ncep.noaa.gov/products/CDB/CDB_Archive_html/CDB_archive.shtml**) ⚓

# Marine Weather Review – North Atlantic Area

## September 2014 to February 2015

*George P. Bancroft*
*Ocean Forecast Branch, Ocean Prediction Center, College Park, MD*
*NOAA National Center for Environmental Prediction*

### Introduction

The fall to mid-winter period of September 2014 to February 2015 featured the onset of mainly a progressive and amplified pattern of developing cyclones moving from southwest to northeast across the North Atlantic toward Greenland and Iceland, with cyclones less frequently taking a more northwesterly track toward the Davis Strait, or a more southern track over the central North Atlantic waters toward Europe. The heavy weather season started early with two hurricane force lows developing in middle to late September. October featured two such events including one with tropical origin (Hurricane Gonzalo). The numbers of hurricane force lows then increased from November to January, reaching a peak of 12 events in January, before easing to eight in February. These trends support the seasonal increase in numbers of hurricane force lows to a peak in January in the North Atlantic found in a study done in 2005 based on QuikSCAT winds (VonAhn and Sienkiewicz, 2005). One cyclone developed a central pressure below 940 hPa east of Greenland early in January. Three other cyclones, one in early December and two in January, developed central pressures in the low 940s.

The six month period includes the last half of the hurricane season in the Atlantic basin. It turned out to be a quiet season in terms of the number of named tropical cyclones. The three tropical cyclones that affected OPC's marine area north of 31N were hurricanes, including two major hurricanes (category 3 or higher on the Saffir-Simpson scale, Reference 4 and 5).

One of these, Gonzalo, was the strongest and briefly developed into a post tropical hurricane force (extratropical) low over the North Atlantic. There was no late season activity after October.

### Tropical Activity

#### Hurricane Edouard:

Edouard briefly became a major hurricane while approaching 31N near 58W on the morning of September 16th with maximum sustained winds of 105 kts. The cyclone moved northward and then turned northeast late on the 16th and accelerated the following day with a slow weakening trend. By the 18th the weakening cyclone turned eastward along 40N, passing near 40N 42W as a minimal hurricane with 65 kts winds at 1800 UC on the 18th , and then weakening to a tropical storm six hours later. Edouard then lost tropical characteristics and became a post tropical gale near 40N 38W at 1800 UTC on the 19th. The cyclone then turned southeast and then south late on the 20th as a remnant low, and dissipated near 30N 32W late on the 22nd.

#### Hurricane Fay:

A short lived tropical cyclone with non tropical origin, Fay briefly became a hurricane while approaching and then passing over and just north of the island of Bermuda early on October 12th, with highest sustained winds 70 kts on the morning of the 12th. As a cold front approached, Fay then turned northeast and then east and weakened (**Figure 1**), and passed near 34N 59W as a 50 kts tropical storm at 0000 UTC on the 13th. Fay then became a post tropical cyclone the next morning and merged with a front. Post tropical Fay was strongest while passing near 33N 44W with a 1000 hPa central pressure and storm force winds at 1200 UTC on the 14th. The **ALLIANCE ST. LOUIS** (WGAE) near 36N 60W reported north winds of 40 kts and 5.8 m seas (19 ft) at 0600 UTC on the 13th.
The **MAERSK DAYTON** (DDSC2) near 34N 46W reported north winds 35 kts and 6.7m

seas (22 ft) at 1600 UTC on the 14th, and the **ESMERALDA** (9HA3564) near 34N 40W encountered northeast winds of 40 kts two hours later. Fay then tracked east southeast on the 14th and then accelerated northeast late on the 15th and became absorbed by a large gale to the north early on the 17th.

**Hurricane Gonzalo:**

Gonzalo's winds peaked at 125 kts (category 4 intensity on the Saffir-Simpson scale) when 460 nm south southwest of Bermuda at 1200 UTC October 16 (Ref. 5). Gonzalo crossed into OPC's marine area near 31N 66W as a 105 kts (category 3), although weakening, hurricane at 1800 UTC on the 17th and passed over Bermuda 0030 UTC on the 18th. The Bermuda airport (TXKF) reported a west wind of 81 kts shortly after passage of the hurricane's eye. Gonzalo then tracked northeast and slowly weakened but remained a hurricane until transition into a post tropical cyclone on the 19th (**Figure 2**). **Figure 3** is an ASCAT image showing strongest winds around Gonzalo, up to 75 kts, close to the center, a characteristic of tropical cyclones. Gonzalo was still a hurricane at that time. After briefly maintaining hurricane force winds as a post tropical low, Gonzalo then moved northeast and weakened to a gale the following night, before re-intensifying into a storm force low passing near northern Scotland with a 976 hPa center at 0600 UTC on the 21st. Post tropical Gonzalo then moved inland over Denmark as a gale late on the 21st.

## Other Significant Events of the Period

**Northwestern Atlantic Storms, September 3-7:**

A developing cyclone moved from northern Quebec on the morning of September 3rd to the Davis Strait early the next day, where it developed a lowest central pressure of 980 hPa and storm force winds. An ASCAT (METOP-A) pass from 1305 UTC on the 4th returned south to southeast winds up to 45 kts off the southwest Greenland coast, meaning possible storm force considering the low bias of ASCAT winds. The cyclone weakened in the Davis Strait on the 5th and was followed by another cyclone moving from central Quebec on the 5th to the northern Labrador Sea with a central pressure as low as 984 hPa at 1800 UTC on the 7th. The **EURODAM** (PHOS) near 59.5N 47W reported southeast winds of 51 kts and 4.0 m seas (13 ft) two hours later. The cyclone then weakened while turning toward the southeast and dissipated southeast of Cape Farewell late on the 9th.

**North Atlantic Storm, Greenland area, September 12-15:**

Low pressure moved from southern Quebec early on September 11th to the Labrador coast on the morning of the 12th and then to the east Greenland waters early on the 14th, where it became the first hurricane force low of the fall season (**Figure 4**). Westerly winds south of the low of up to 60 kts detected by ASCAT are channeled against the southern tip of Greenland (**Figure 5**). This data supports the presence of hurricane force winds due to the low bias of ASCAT at high wind speeds. The **MARY ARTICA** (BATEU00) reported east winds of 45 kts near 65N 38W at 0800 UTC on the 14th. The cyclone then weakened while passing between Greenland and Iceland the following night.

**North Atlantic Storm, Greenland area, September 28-October 1:**

Low pressure moving off the southern Labrador coast on the morning of September 27th developed gale force winds, and then turned northeast toward the east Greenland waters on the 28th and early on the 29th while rapidly intensifying (**Figure 6**) and became the second hurricane force low of the month. The central pressure fell 28 hPa in the twenty four hour period ending at 0600 UTC on the 29th. The ship **BATEU08** (64N 33W) reported south winds of 65 kts at 2200 UTC on the 29th. The second part of **Figure 6** shows a second developing storm moving north toward the east Greenland waters, after having moved off the southern Labrador coast the previous day. It, along with the other low, formed a complex storm system between Greenland and Iceland by 1200 UTC on the 30th with a lowest central pressure of 952 hPa near 64N 31W.

The combined center then accelerated northeast on October 1st and passed north of Iceland late on the 1st. Ship **BATEU08** encountered west winds of 45 kts near 60N 48W at 1600 UTC on that day.

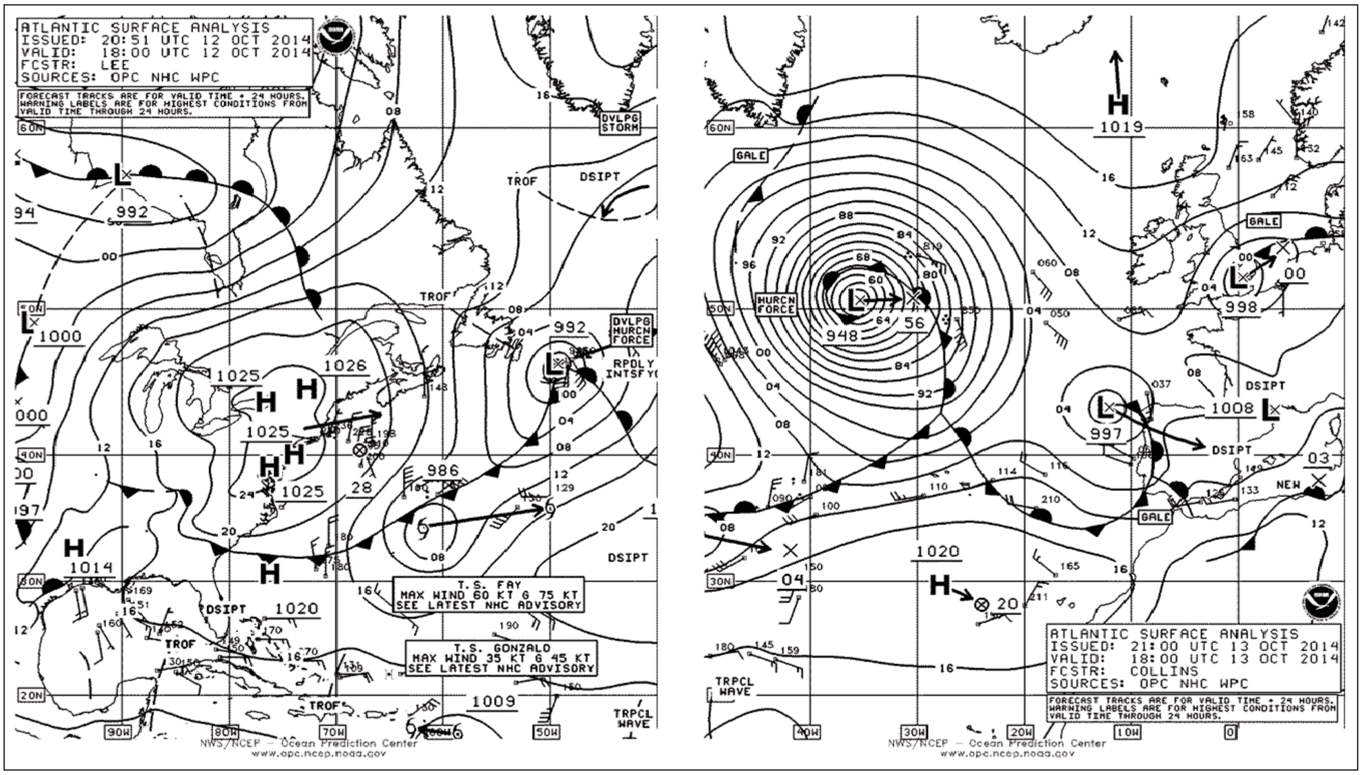


**Figure 1. OPC North Atlantic Surface Analysis charts valid 1800 UTC October 12 (Part 2 – west) and 1800 UTC October 13, 2014 (Part 1 – east). Twenty-four hour forecast tracks are shown with the forecast central pressures given as the last two whole digits in millibars except for tropical cyclones at twenty-four hours (tropical symbol at the forecast position).**

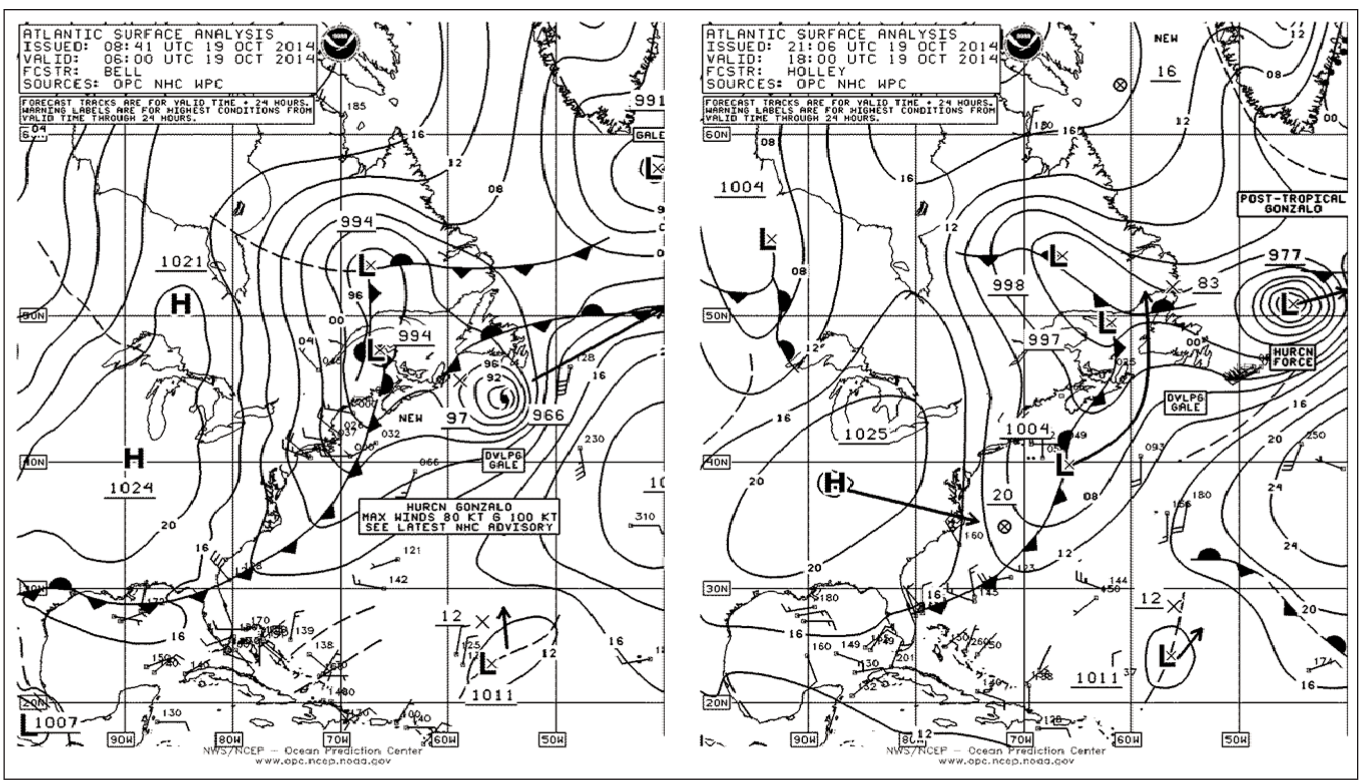


**Figure 2. OPC North Atlantic Surface Analysis charts (Part 2) valid 0600 UTC and 1800 UTC October 19, 2014.**

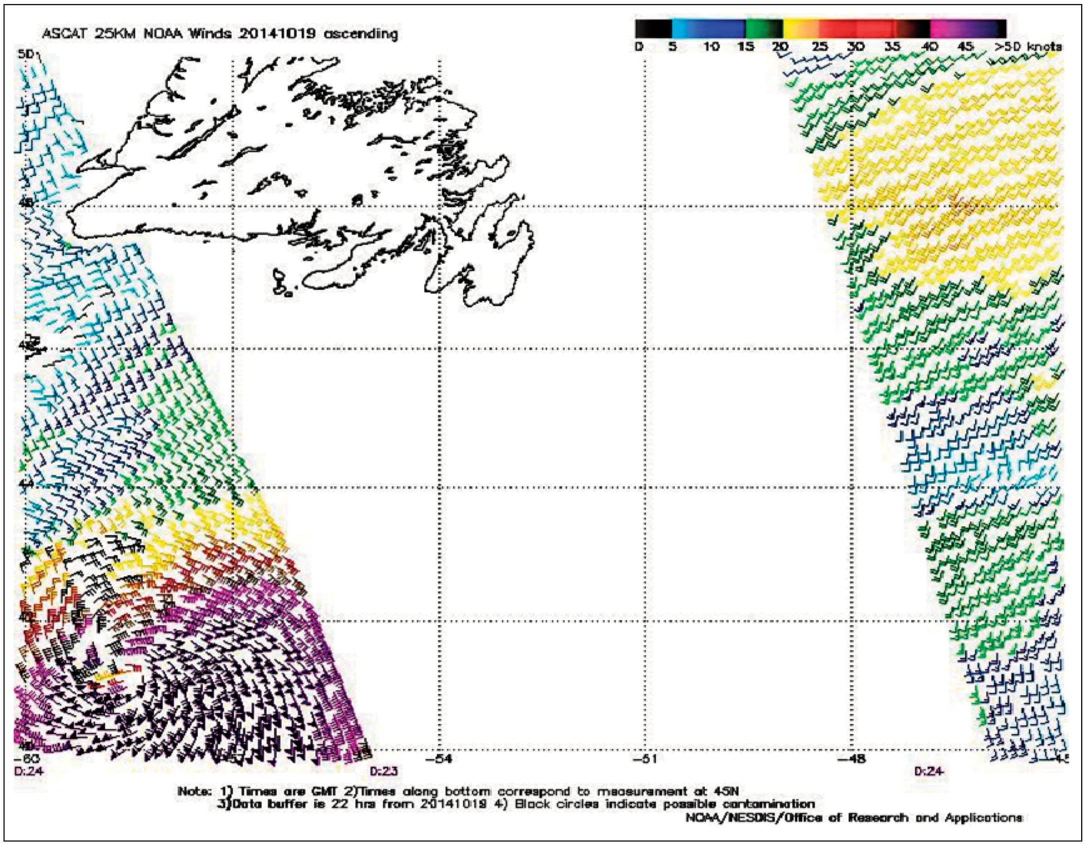


**Figure 3. ASCAT METOP-B(Advanced Scatterometer) image of satellite-sensed winds with 25-km resolution around Hurricane Gonzalo shown in the first part of Figure 2. The valid time of the pass is 0116 UTC October 19, 2014, or less than five hours prior to the valid time of the first part of Figure 2. Imagery is courtesy of NOAA/NESDIS/ Center for Satellite Applications and Research.**

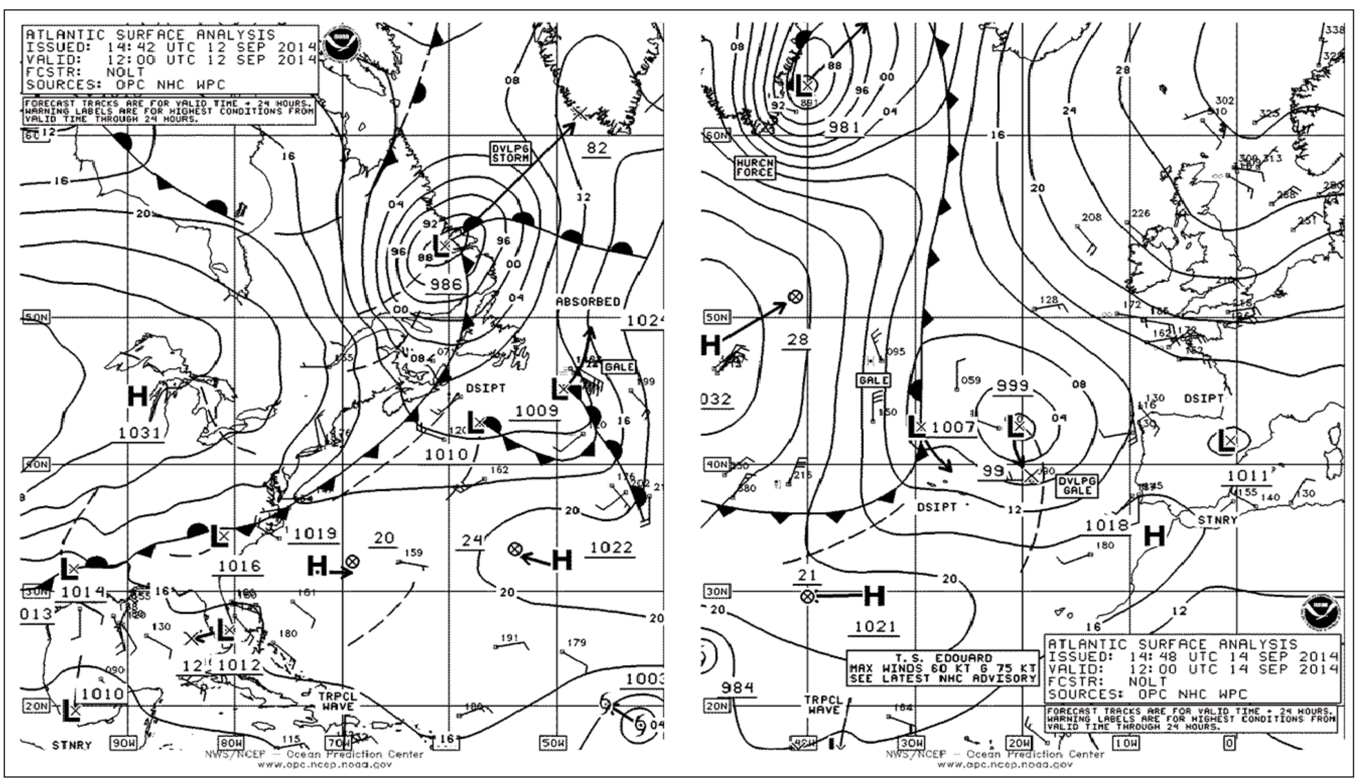


**Figure 4. OPC North Atlantic Surface Analysis charts valid 1200 UTC September 12 (Part 2) and 1200 UTC September 14, 2014.**

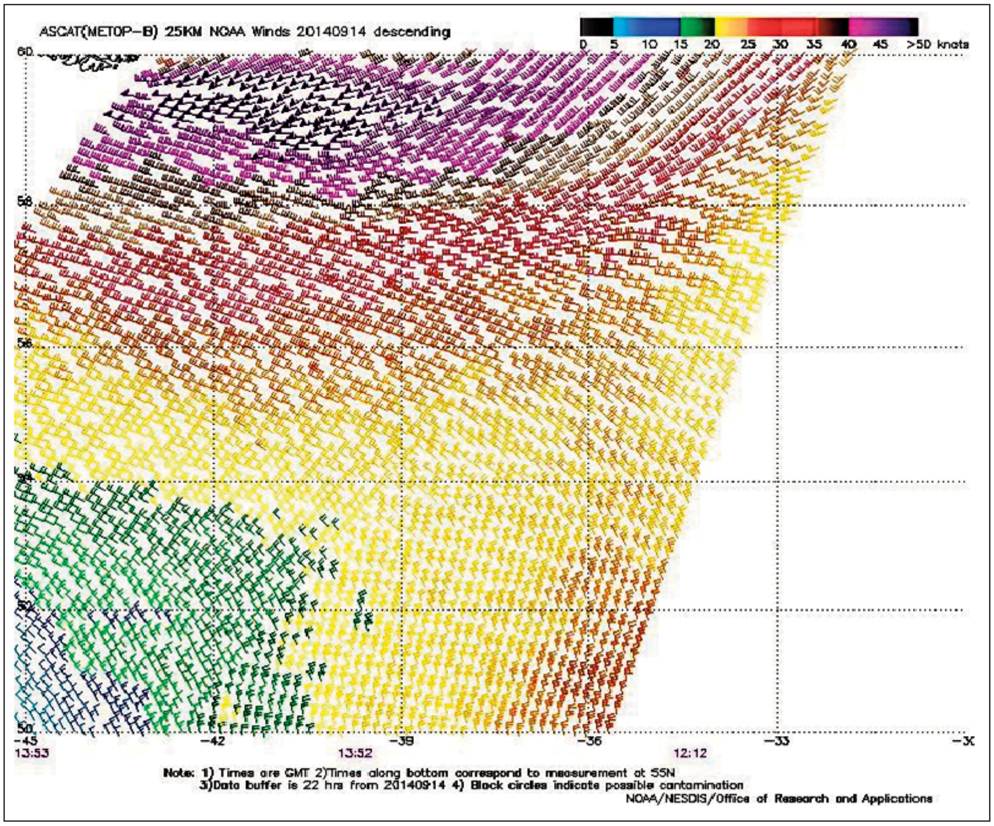


**Figure 5. ASCAT (METOP-B) image of satellite-sensed winds with 25-km resolution around the south side of the cyclone shown in the second part of Figure 4. The valid time of the pass is 1352 UTC September 14, 2014, or about two hours later than the valid time of the second part of Figure 4. The southern tip of Greenland appears at the top of the image. Imagery is courtesy of NOAA/NESDIS/ Center for Satellite Applications and Research.**

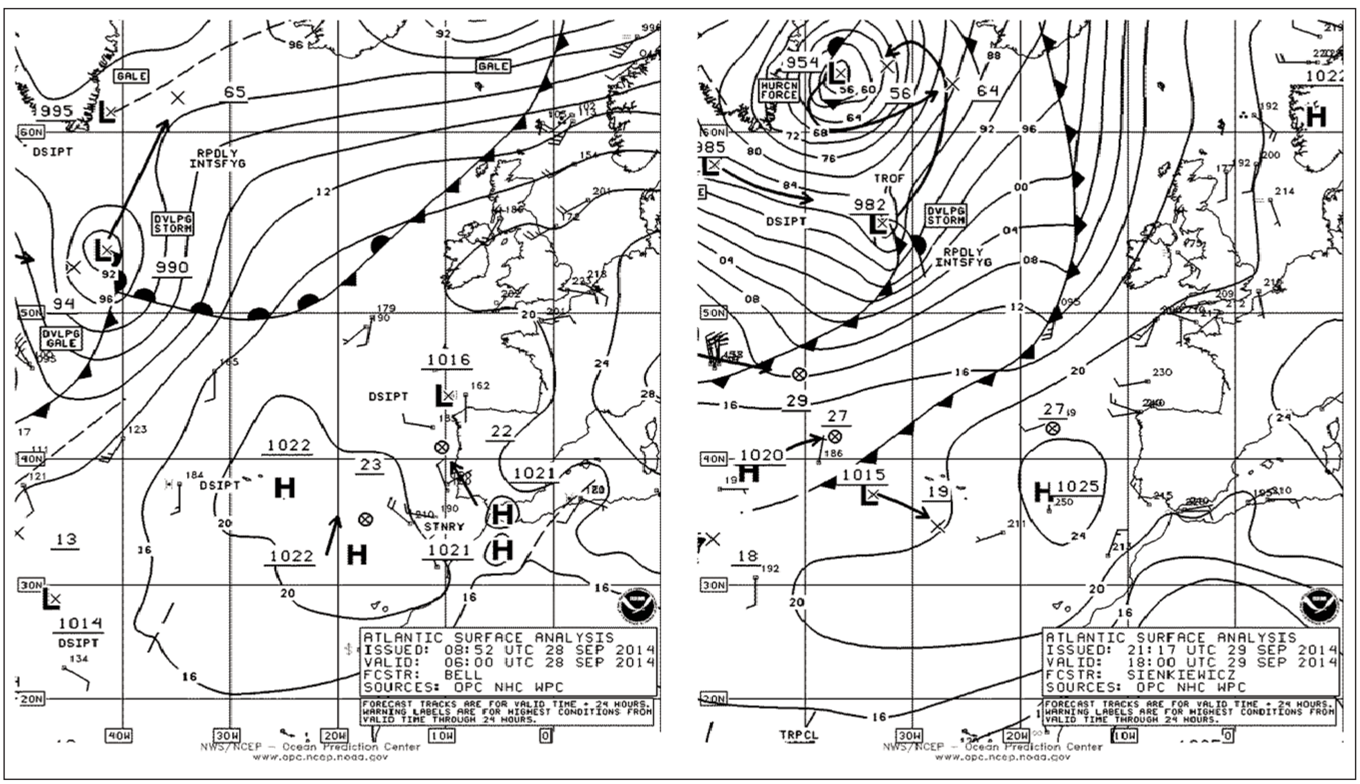


**Figure 6. OPC North Atlantic Surface Analysis charts (Part 1) valid 0600 UTC September 28 and 1800 UTC September 29, 2014.**

**North Atlantic Storm, October 12-15:**

The development of this cyclone, the first of two to develop a 948 hPa central pressure and occurring as Tropical Storm Fay was traversing the southern waters, is depicted in **Figure 1**. It originated near the northern mid- Atlantic coast of the U.S. early on October 11th, moved northeast and quickly intensified after passing east of the island of Newfoundland on the afternoon of the 12th. The central pressure fell 46 hPa in the 24 hour period ending at 1200 UTC on the 13th, or almost twice the rate needed for a meteorological "bomb" at 60N (Sanders and Gyakum, 1980). The **ARCADIA** (ZCDN2) sent several reports, including a report of northwest winds of 90 kts near 49N 42W and 5.2 m seas (17 ft) at 0900 UTC on the 13th. Four hours later the same ship encountered northwest winds of 65 kts and 12.8 m seas (42 ft) near 49N 40W. This was followed three hours later by a report of northwest winds 70 kts and 11.3 m seas (37 ft) near 50N 39W. The **INDEPENDENCE II** (WGAX) near 49N 40W encountered southeast winds of 60 kts at 0600 UTC on the 13th. The cyclone, after maintaining hurricane force winds from 0600 UTC on the 13th through 0000 UTC on the 14th, began to weaken and drift east with its top winds lowering to gale force by early on the 15th. The cyclone then became absorbed by a large gale passing to the south the next day.

| Observation | Position | Date / Time UTC | Wind Speed, kts | Seas (m/ft) |
|---|---|---|---|---|
| Seven Seas Navigator | 35.6N 75W | 02/0800 | N 50 | N/A |
| (C6ZI9) | 35N 75W | 02/1100 | NW 50 | N/A |
| Maersk Iowa | 40N 72W | 02/1400 | N 50 | N/A |
| (KABL) | | | | |
| Maersk Detroit | 40N 65W | 02/1800 | SW 50 | 10.7/35 |
| (WMDK) | | | | |
| Ship CFL24 | 43.8N 60.6W | 03/0900 | W 51 | 6.0/20 |
| Thebaud Platform | 43.9N 60.2W | 03/0600 | SW 54 G67 | N/A |
| (CFO383) | | | | |
| Buoy 44014 | 36.6N 74.8W | 02/0200 | NW 41 G49 | 4.5/15 |
| | | 02/0600 | Peak gust 51 | |
| | | 02/0800 | | Maximum 6.0/20 |
| Buoy 41048 | 32.0N 69.5W | 02/0600 | SW 35 G49 | 5.5/18 |
| | | 02/0900 | | Maximum 8.0/26 |
| Buoy 44137 | 42.3N 62.0W | 03/0300 | SW 43 G52 | 9.5/31 |
| | | 03/0200 | Peak gust 54 | |
| | | 03/0400 | | Maximum 10.0/33 |
| Buoy 44024 | 42.3N 65.9W | 03/0200 | NW 37 G47 | 7.5/25 |
| | | 03/0700 | | Maximum 8.0/26 |

**Table 1. Selected ship, platform and buoy observations taken during the southwestern North Atlantic storm of November 1-3, 2014.**

**Southwestern North Atlantic Storm, November 1-3:**

The initial rapid development of this system is shown in **Figure 7**. The trailing low pressure system and secondary cold front on the southeast U.S. coast absorbed the initial low off the mid Atlantic coast during the 24 hour period. The cyclone became the only hurricane force event over the southwestern waters during the four month period through December. The lowest central pressure was 974 hPa over the Gulf of St. Lawrence at 0600 UTC on the 3rd. The cyclone stalled there before dissipating late on the 4th as a new cyclone formed to the north and moved toward Iceland. Some notable surface observations taken in this event are listed in **Table 1**.

**North Atlantic Storm, November 8-10:**

Low pressure originating over the northeastern U.S. and New England on the afternoon of November 6th moved northeast to the Gulf of St. Lawrence late on November 7th and then over the following 24 hours reformed northeastward off the southern Labrador coast as a 961 hPa storm center (**Figure 8**). A scatterometer pass (**Figure 9**) returned winds up to 60 kts north of an occluded front approaching Greenland. The low bias of ASCAT at higher wind speeds indicates winds likely reached hurricane force late on the 8th before the system turned toward the east and weakened the following night and on the 9th.The cyclone then dissipated by early on the 10th as a new cyclone developed to the east.

**Northwestern Atlantic Storm, November 15-16:**

The main development of this cyclone, which originated near the North Carolina coast early on November 13th, is shown in **Figure 10**. In this 24 hour period the low center's central pressure dropped 27 hPa, and the lowest central pressure occurred six hours later. Like in the previous event, November 8-10, this cyclone developed winds to 60 kts in ASCAT imagery (**Figure 11**), but on the south side of the center where there is a tight pressure gradient as indicated in the second part of **Figure 10**. **BATEU06** (51N 55W) reported west winds of 40 kts at 1900 UTC on the 15th. The platform **HIBERNIA** (46.7N 48.7W) reported west winds 49 kts at a height of 139 m and seas 3.0 m (10 ft) at 1500 UTC on the 15th, and 12 hours prior, reported 4.0 m seas (13 ft). The cyclone subsequently stalled and weakened near the southern tip of Greenland late on the 16th and on the 17th.

**North Atlantic Storm, November 17-19:**

A wave of low pressure that formed on a front south of Newfoundland at 0000 UTC November 16th (second part of **Figure 10**) moved northeast and rapidly intensified over the central waters after 0600 UTC on the 17th, with the central pressure dropping 26 hPa in the following 24 hours. **Figure 12** shows the cyclone near maximum intensity at 1200 UTC on the 18th. The cyclone developed a lowest central pressure of 967 hPa six hours later near 50N 23W when OPC analyzed it as a hurricane force low. **Figure 14** shows wind retrievals from two ASCAT-B passes with the pass at 1307 UTC on the 18th revealing northwest winds to 60 kts. The cyclone therefore briefly developed hurricane force winds early on the 18th before it drifted southeast and weakened, and became a gale force low in the east central waters 1200 UTC on the 19th (**Figure 13**). Dissipation followed on the next day.

**Northwestern Atlantic Storms, November 18-23:**

Two hurricane force lows affected the Labrador Sea and southern Greenland late in November. The more intense of these developed a lowest central pressure of 948 hPa while moving off the northern Labrador coast at 1200 UTC on the 19th, after forming in the Gulf of St. Lawrence 24 hours prior (**Figure 12** and **Figure 13**). The central pressure fell 40 hPa during the twenty four hour period ending at 0600 UTC on the 19th. Winds lowered to storm force the afternoon of the 19th and to gale force the next day as the system moved north through the Davis Strait while weakening. The second low initially followed an inland track through the Great Lakes on the 19th (**Figure 13**) and along the St. Lawrence River the next day before intensifying into a hurricane force low with a central pressure as low as 960 hPa near 56N 50W at 1800 UTC on the 22nd. This event was similar in intensity and winds to the November 8-10 storm. An ASCAT-A image from 1415 UTC on the 22nd revealed retrieved winds on the edge of the pass from the east to 55 kts on the north side and from the west 50 kts on the south side. The ship **VRY03** (47N 43W) reported south winds of 46 kts at 0000 UTC on the 22nd. The platform **HIBERNIA** (46.7N 48.7W) encountered west winds of 50 kts and 6.0 m seas (20 ft) at 0600 UTC on the 23rd. The cyclone subsequently weakened to a gale force low while passing near the southern tip of Greenland at 1800 UTC on the 23rd before dissipating by the 25th as a new low formed to the northeast.

**North Atlantic Storm, November 29-December 1:**

A subsequent event at the end of November involved low pressure tracking from the southeastern U.S. on the 27th northeast across the Grand Banks late on the 28th and then as shown in **Figure 15** the final development into a hurricane force low passing near Iceland at1800 UTC on the 30th. The cyclone passed north of Iceland six hours later with a lowest central pressure of 957 hPa. The ASCAT-B image in **Figure 16** returned a swath of west winds containing numerous 60 kts wind reports, and it is possible the pass missed higher winds as these retrieved winds are on the edge of a pass. The cyclone then continued to move northeast from Iceland and weakened on December 1st.

**Northwestern Atlantic Storm, December 1-2:**

This short lived event involved a low pressure area moving northeast across Quebec on November 30th, passing off the north Labrador coast the following night and then briefly developing hurricane force winds while passing near 62N 59W with a 968 hPa center around 1800 UTC December 1st. An ASCAT-B pass from 2329 UTC on the 1st returned a swath of west winds to 55 kts south of the center similar to the winds in **Figure 16** but not quite as strong. The system then moved north through the Davis Strait and weakened rapidly the following night and on the 2nd.

**Northwestern Atlantic/ Greenland Storms, December 4-6:**

The development of the stronger of two cyclones from its origin as an open wave over New Brunswick over a 36 hour period is depicted in **Figure 17**. Similar to the December 7-11 event that followed, the central pressure fell 50 hPa in the 24 hour period ending at 0000 UTC December 5th, or more than twice the rate of deepening needed for a meteorological “bomb” at 60N (Sanders and Gyakum, 1980). To support this development, two short wave troughs appear on a 500 hPa analysis for 0000 UTC on the 4th (**Figure 18**) at the start of rapid intensification, supported by strong 500 hPa winds, and are about to come into phase or reinforce one another. More information on use of the 500 Millibar chart may be found in the References (Sienkiewicz and Chesneau, 2008). The primary cyclone spawned a new or secondary low center on the east side of Greenland by 0600 UTC on the 5th (**Figure 17**) which briefly developed hurricane force winds six hours later. An ASCAT-A pass from 2318 UTC December 4th with partial coverage revealed southeast winds to 50 kts off the southwest Greenland coast and west winds to 50 kts in the Labrador Sea. The primary cyclone dissipated over Greenland late on the 5th while the secondary low moved northeast and dissipated near Iceland late on the 6th.

**North Atlantic Storm, December 7-11:**

This developing cyclone moved from New England early on December 6th northeast to the Labrador Sea on the 7th and developed storm and hurricane force winds while passing near and east of Greenland on the night of the 7th and on the 8th. **Figure 19** depicts the final 36 hour period of development, including a fall in central pressure of 51 hPa in the 24 hour period ending at 1800 UTC on the 8th. Hurricane force winds accompanied the system as it moved through the East Greenland Sea over the following twenty four hours. The lowest central pressure was 941 hPa (27.79 in) as shown in the second part of **Figure 19**, making it the second deepest of the six month period in the North Atlantic. The scatterometer image in **Figure 20** taken about eight hours prior to maximum intensity returned a swath of 50 to 60 kts on the south side and even some 70 kts barbs along the Greenland coast.

The **IRENA ARTICA** (BATEU05) near 61N 42W reported north winds of 50 kts at 1000 UTC on the 8th. The ship **BATEU08** (60N 39W) encountered west winds 50 kts at 1700 UTC on the 9th. Buoy 64045 (59.2N 11.7W) reported west winds 45 kts with gusts to 62 kts and 14.0 m seas (46 ft) at 0300 UTC on the 10th, followed six hours later by a report of 15.8 m seas (52 ft). Buoy 62105 (55.0N 12.4W) reported similar conditions at 0800 UTC on the 10th and, one hour later, a peak gust of 63 kts and 15.2 m seas (50 ft). The system weakened while passing east of Iceland on the 10th and was pushed inland over Norway by the approach of the next major cyclone by the 13th (**Figure 21**). (cont. Page 36)

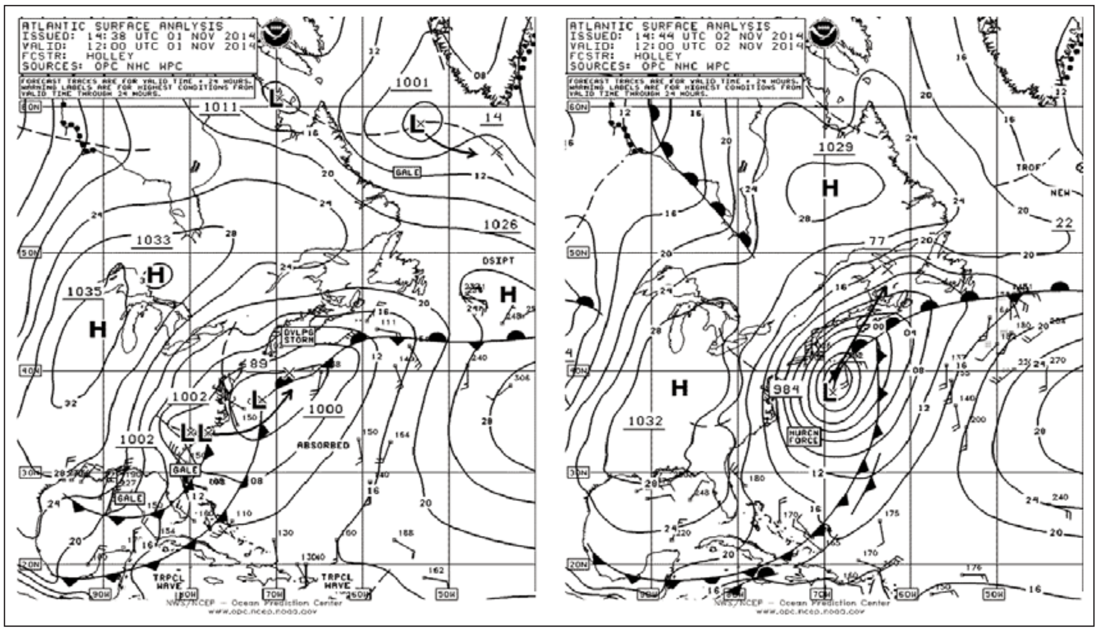


**Figure 7. OPC North Atlantic Surface Analysis charts (Part 2) valid 1200 UTC November 1 and 2, 2014.**

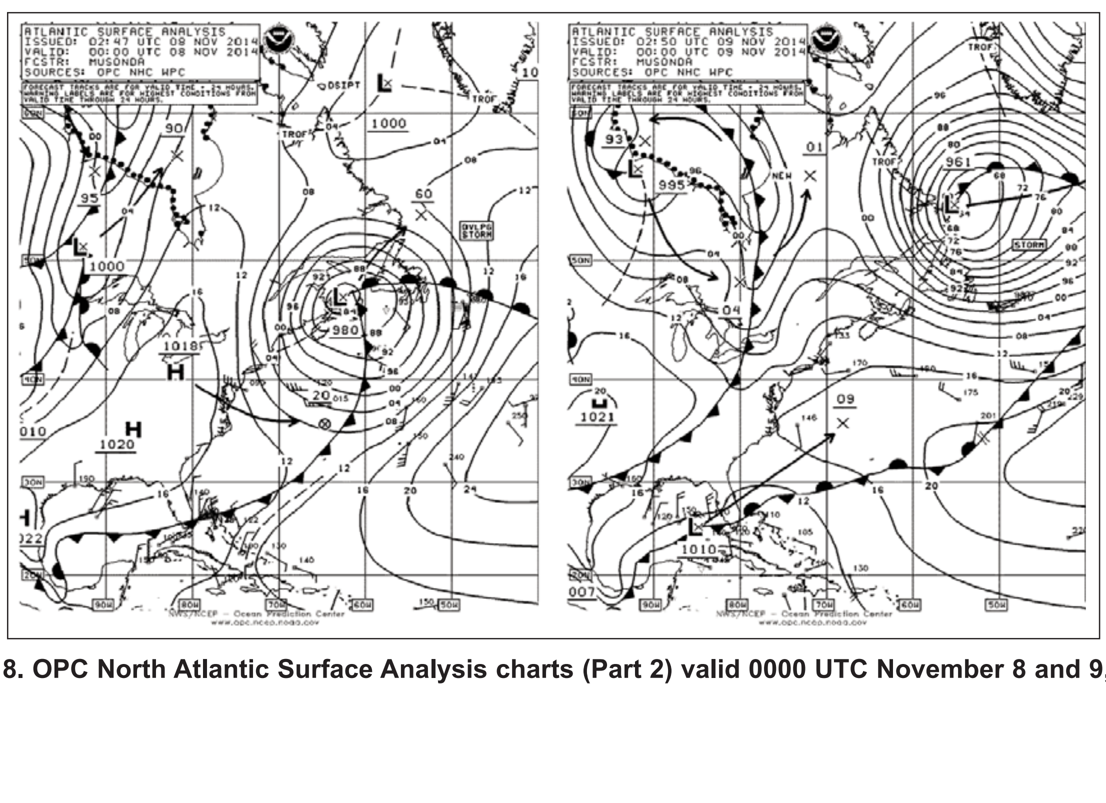


**Figure 8. OPC North Atlantic Surface Analysis charts (Part 2) valid 0000 UTC November 8 and 9, 2014.**

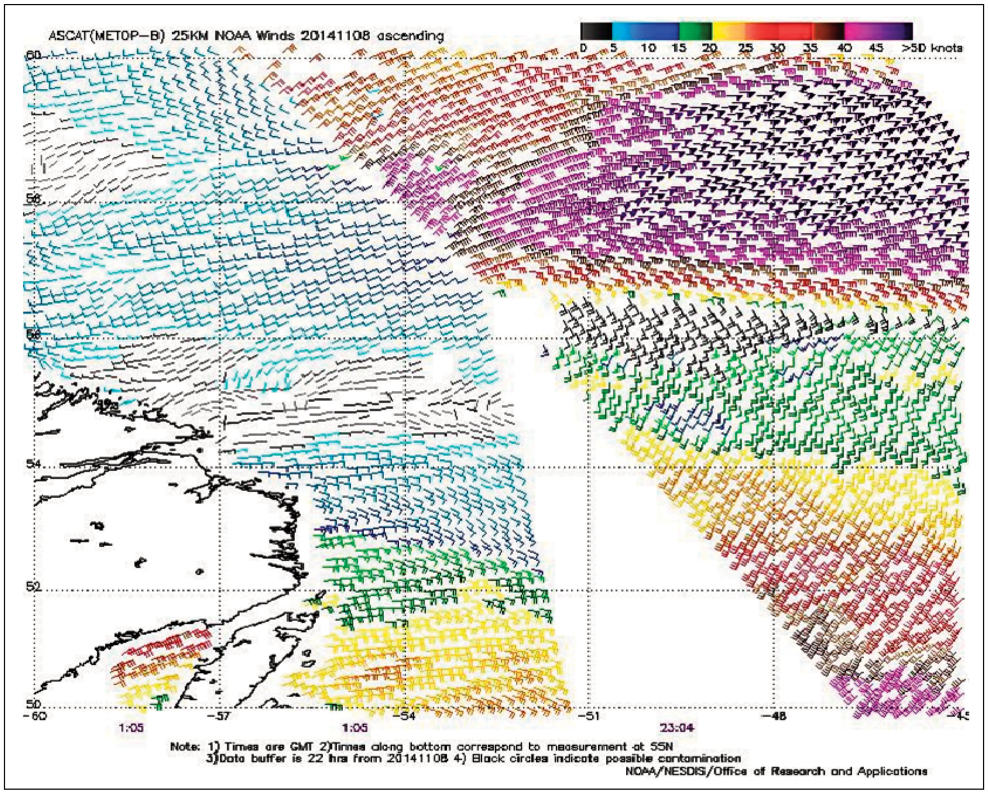


**Figure 9. ASCAT (METOP-B) image of satellite-sensed winds with 25-km resolution around the storm shown in the second part of Figure 8. The valid time of the eastern pass containing the higher wind retrievals is 2304 UTC November 8, 2014, or about one hour prior to the valid time of the second part of Figure 8. Imagery is courtesy of NOAA/NESDIS/ Center for Satellite Applications and Research**

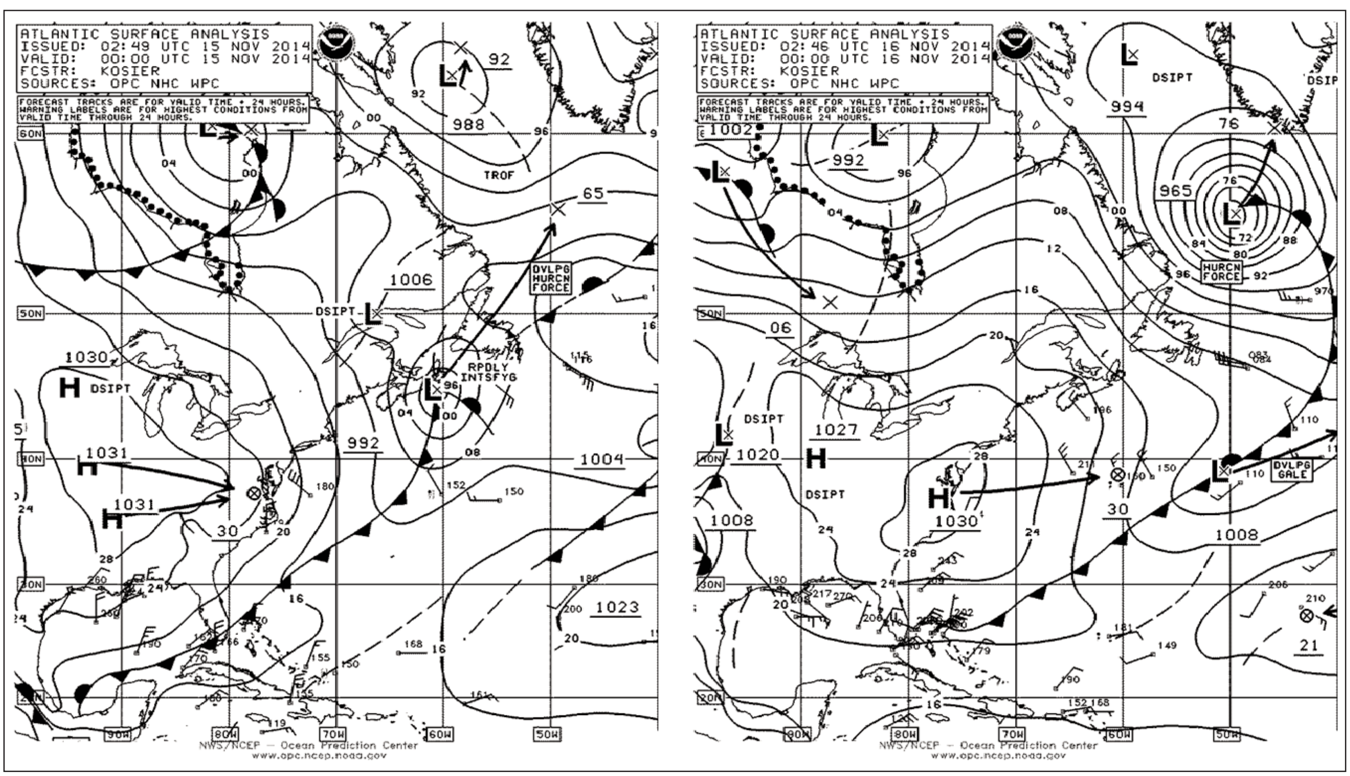


**Figure 10. OPC North Atlantic Surface Analysis charts (Part 2) valid 0000 UTC November 15 and 16, 2014.**

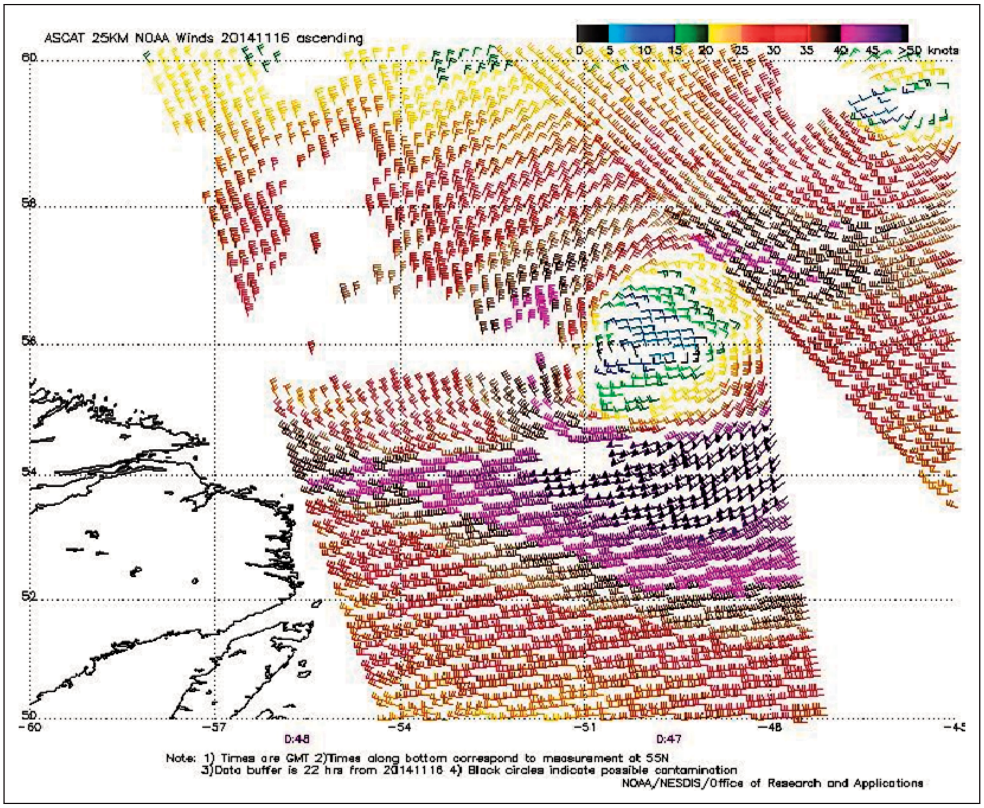


Figure 11. ASCAT (METOP-A) image of satellite-sensed winds with 25-kmresolution around the cyclone shown in the second part of Figure 10. The valid time of the pass containing the strongest winds is 0047 UTC November 16, 2014, or about three quarters of an hour later than the valid time of the second part of Figure 10. The center of the cyclone appears near 56N 50W. Imagery is courtesy of NOAA/NESDIS/ Center for Satellite Applications and Research.

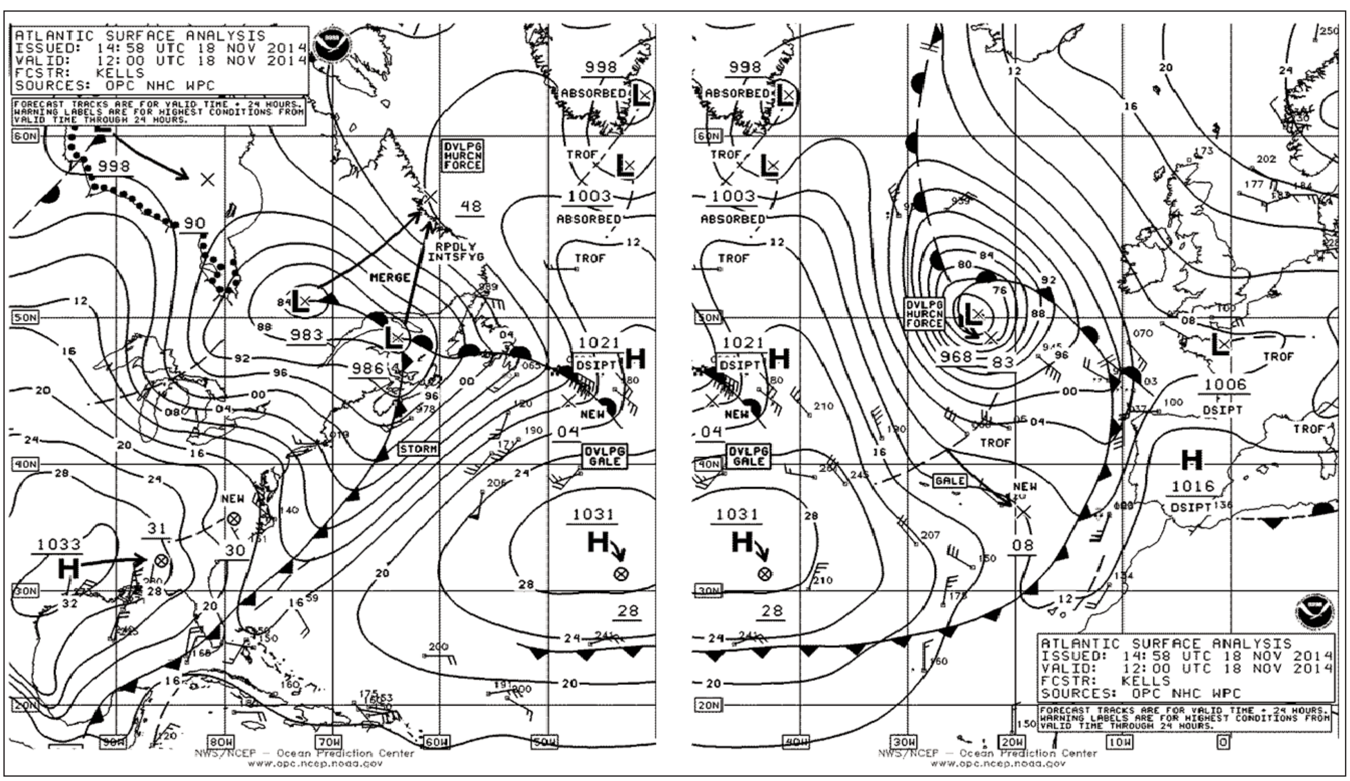


Figure 12. OPC North Atlantic Surface Analysis charts (Parts 1 and 2) valid 1200 UTC November 18, 2014. The two parts overlap between 40W and 50W.

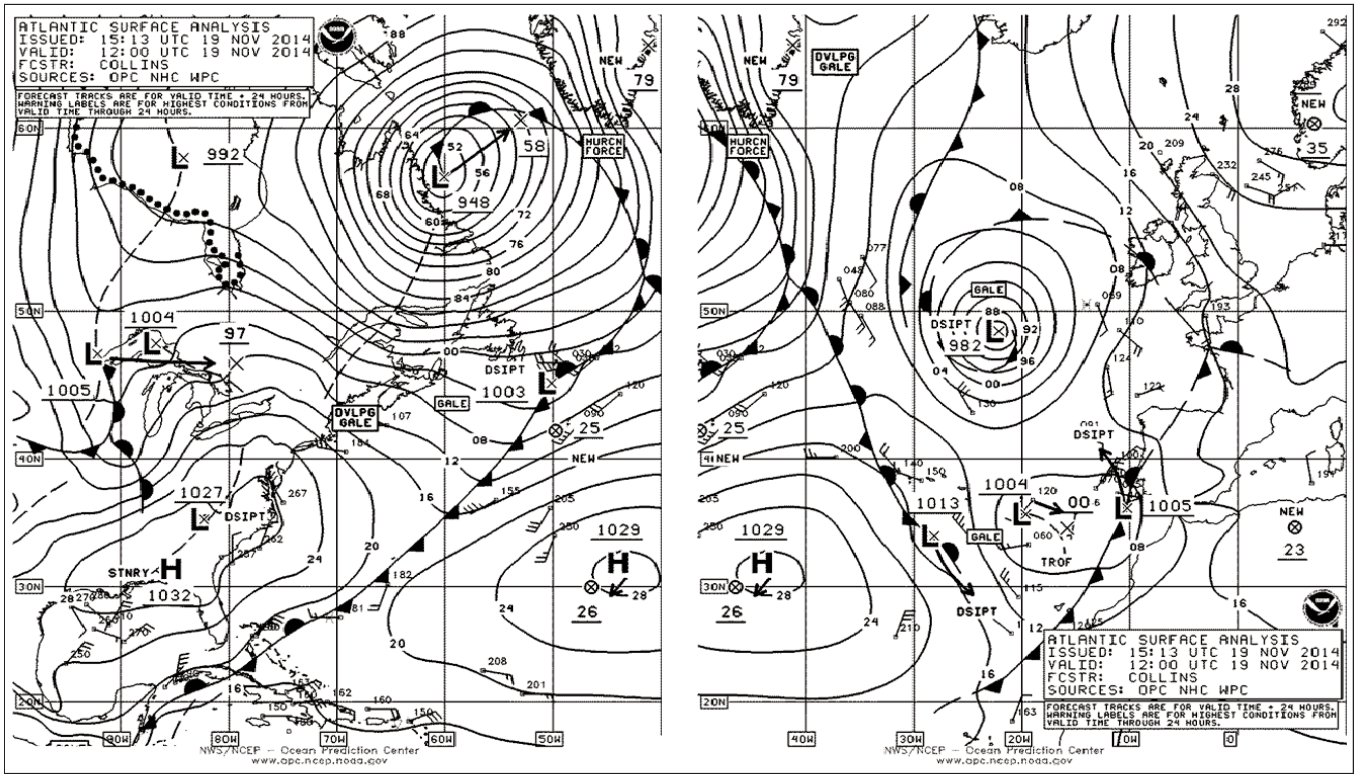


Figure 13. OPC North Atlantic Surface Analysis charts (Parts 1 and 2) valid 1200 UTC November 19, 2014. The two parts overlap between 40W and 50W.

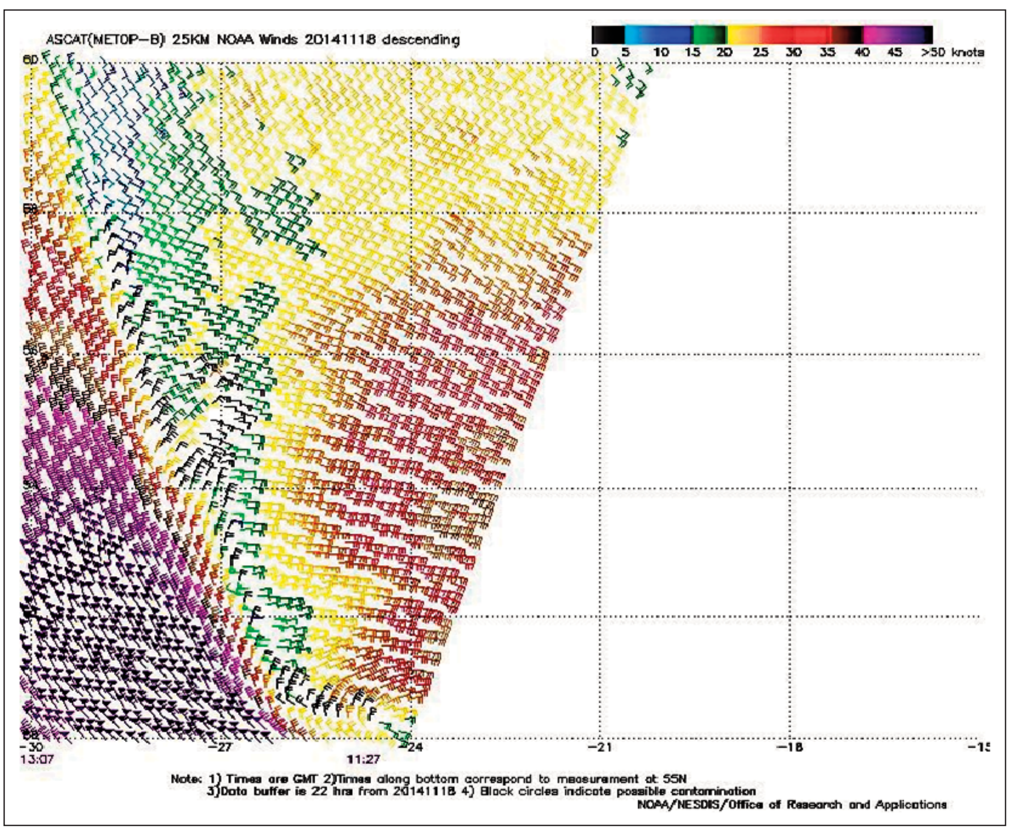


Figure 14. ASCAT (METOP-B) image of satellite-sensed winds with 25-km resolution around mainly and north and northwest sides of the strong cyclone shown in Part 1 of Figure 12. The valid time of the passes is 1127 UTC and 1307 UTC November 18, 2014, with the later pass valid only one hour later than the valid time of Figure 12. Imagery is courtesy of NOAA/NESDIS/ Center for Satellite Applications and Research.

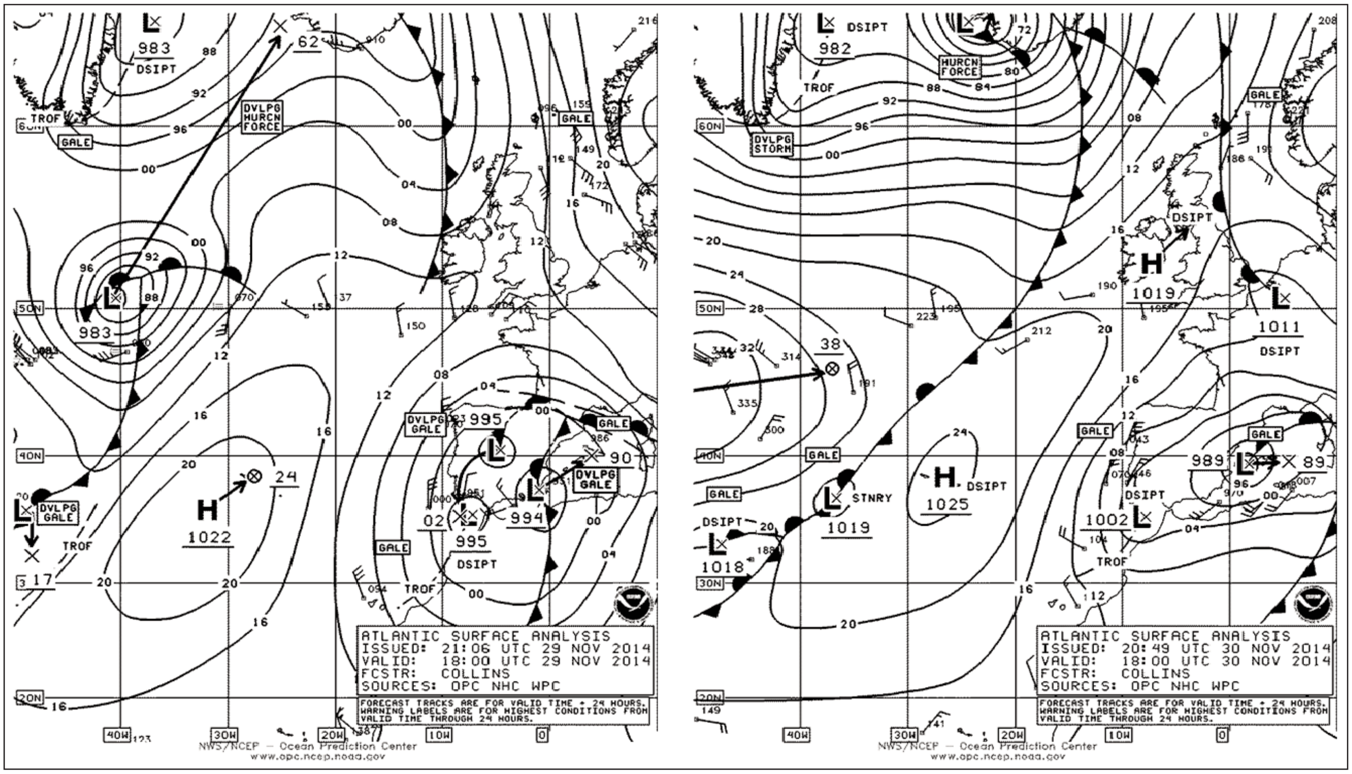


**Figure 15. OPC North Atlantic Surface Analysis charts (Part 1) valid 1800 UTC November 29 and 30, 2014.**

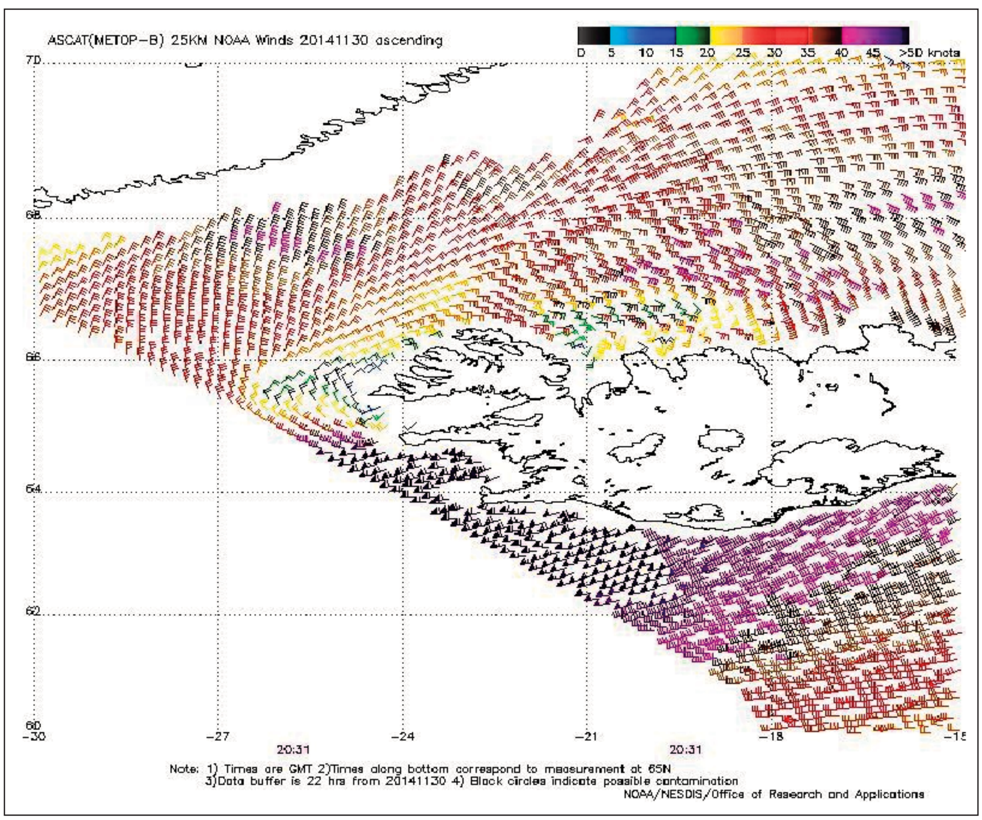


**Figure 16. ASCAT (METOP-B) image of satellite-sensed winds with 25-km resolution around the hurricane-force low near Iceland shown in the second part of Figure 15. The valid time of the pass is 2031 UTC November 30, 2014, or about two and one-half hours later than the valid time of the second part of Figure 15. Imagery is courtesy of NOAA/NESDIS/ Center for Satellite Applications and Research.**

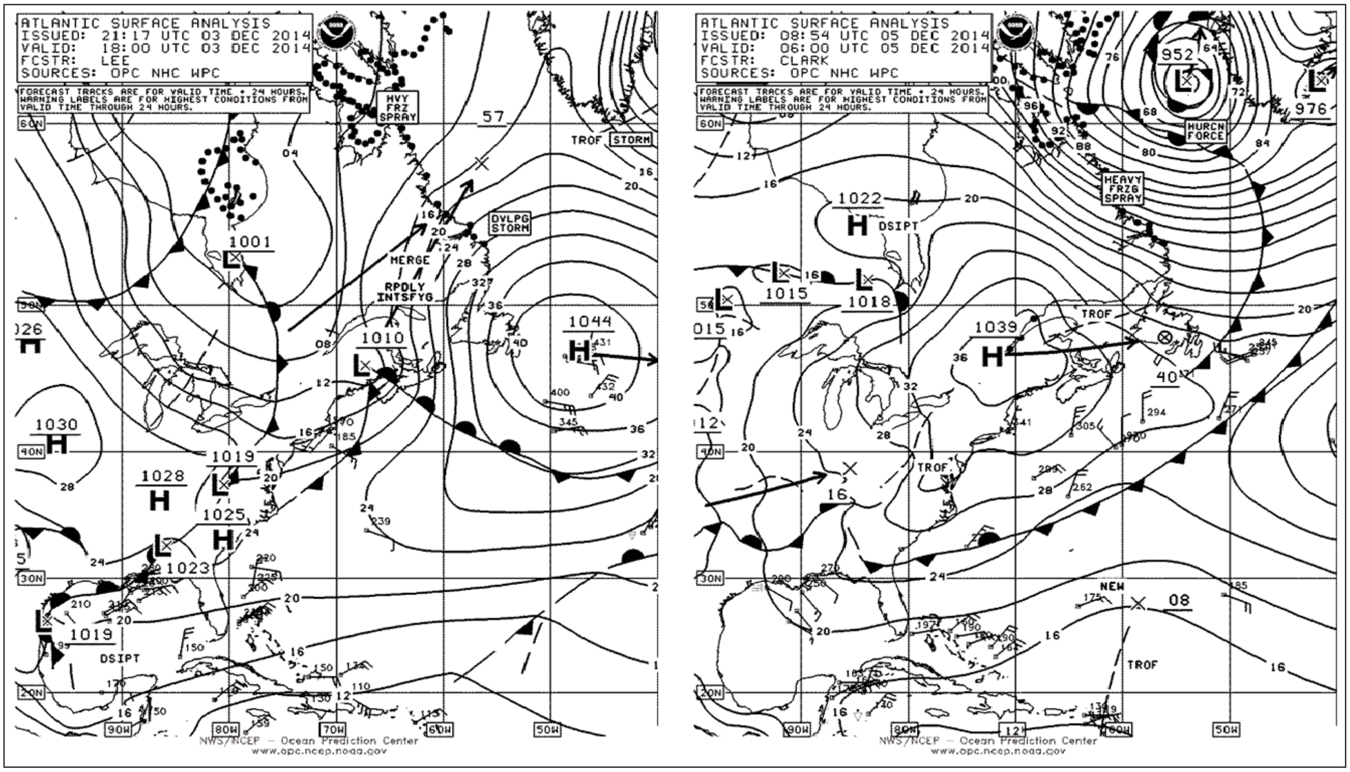


**Figure 17. OPC North Atlantic Surface Analysis charts (Part 2) valid 1800 UTC December 3 and 0600 UTC December 5, 2014.**

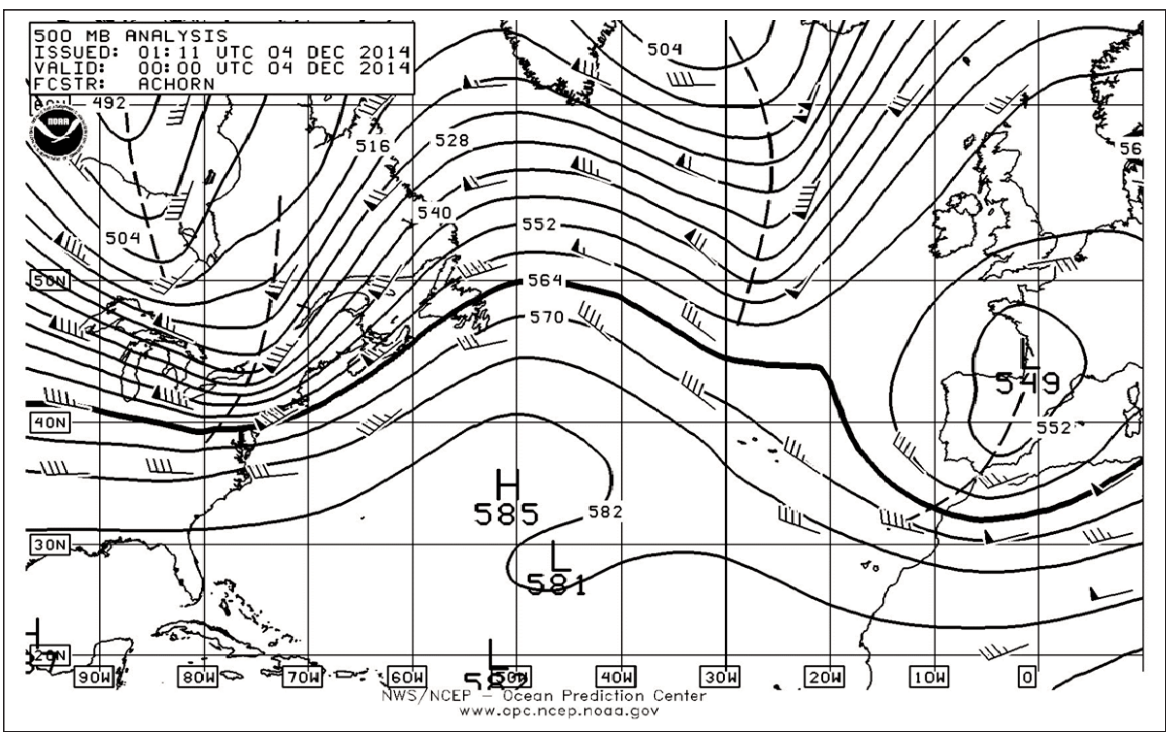


**Figure 18. OPC North Atlantic 500-MB Analysis chart valid 0000 UTC December 4, 2014. Chart is computer-generated with short-wave troughs (dashed lines) manually added.**

**North Atlantic Storms, Iceland area, December 13-15:**

The initial development was as a new low near the east Greenland coast at 1200 UTC on the 12th which became a storm over Iceland at 1800 UTC on the 13th, while another low formed and dropped south from the Denmark Strait to form the hurricane force low as shown in the first part of **Figure 19**. The two lows consolidated into one hurricane force low with a 953 hPa central pressure east of Iceland near 66N 7W 24 hours later (second part of **Figure 19**). An ASCAT-A pass from 2330 UTC on the 13th showed west to northwest winds to 55 kts on the edge of the pass south of the low west of Iceland.
**Figure 22** contains the same type of imagery around the combined low east of Iceland. Some wind retrievals are missing but otherwise winds in the 50 to 60 kts range are widespread around the south and west sides of the low. The cyclone subsequently drifted southwest on the 15th and 16th with winds weakening to below gale force.

**North Atlantic Storm, Greenland-Iceland area, December 15-18:**

A new low formed just south of Greenland near 59N 44W at 1200 UTC on December 15th and moved northeast toward Iceland. It briefly developed hurricane force winds with the center near 64N 34W at 1200 UTC on the 16th, and then redeveloped to the east near Iceland early on the 17th. The central pressure fell 40 hPa in the 24 hour period ending at 1800 UTC on the 16th. The lowest central pressure was 949 hPa at 0600 UTC on the 17th as the center approached Iceland. ASCAT-A imagery at 1355 UTC on the 17th revealed a swath of west winds 50 to 60 kts extending from near the southern tip of Greenland east to near 33W. The cyclone lingered over Iceland until the morning of the 18th while weakening, and then dissipated just south of Iceland later that day.

**North Atlantic Storm, December 19-21:**

A low pressure center, already with gale force winds, moved northeast from the island of Newfoundland with a 987 hPa center on the morning of the 19th and developed storm force winds with a new center forming to the north near 57N 40W 12 hours later. The cyclone developed hurricane force winds with a central pressure as low as 964 hPa near 62N 39W by 0000 UTC on the 20th, with a weakening trend setting in as the low moved toward Iceland the next day. An ASCAT A pass from 2243 UTC on the 20th showed a Greenland tip jet similar to **Figure 5** for the mid-September event except in this event scatterometer winds were as high as 70 kts. The ship **BATEU08** (63N 45W) encountered southwest winds of 44 kts at 2100 UTC on the 20th. The cyclone's top winds weakened to storm force as it approached Iceland the next day and became absorbed by another storm passing north of Iceland late on the 21st.

**Northwestern Atlantic Storm, December 25-27:**

This cyclone, initially strong while passing through eastern Canada on the 25th and 26th, briefly developed hurricane force winds late on the 26th as southeast winds ahead of an occluded front became enhanced and channeled against the southwest Greenland coast. An ASCAT-B pass from 2313 UTC December 26th revealed a swath of southeast winds to 60 kts near the southwest Greenland coast ahead of the approaching front, while the cyclone's 968 hPa center was over northern Labrador. The cyclone then drifted east on the night of the 26th and on the 27th with winds weakening to gale force the following night.

**North Atlantic Storms, January 2-5:**

Low pressure originating over the Gulf of St. Lawrence early on January 2nd moved northeast and developed hurricane force winds with a 972 hPa central pressure in the eastern Labrador Sea on the night of the 3rd before forming a new hurricane force low in the east Greenland waters by 1200 UTC on the 4th. The new cyclone developed a lowest central pressure of 964 hPa near 62N 36W six hours later. An ASCAT pass from 1243 UTC on the 4th showed northwest to north winds to 55 kts west of the center. The cyclone weakened as a new center formed to the north early on the 5th (**Figure 23**) and the two centers dissipated late on the 5th in the Denmark Strait.

**North Atlantic Storm, January 5-10:**

An area of low pressure moved northeast from the Gulf of St. Lawrence early on the 5th and over the following thirty six hours became the deepest low of the six month period with a pressure of 936 hPa (**Figure 23** and **Figure 24**). The central pressure fell 36 hPa in the 24 hour period ending at 1800 UTC on the 6th. The ASCAT image in **Figure 27** reveals a wind maximum coming off the southern tip of Greenland of up to 55 kts, with data coverage incomplete. Although this cyclone was the deepest of the period, it did not have the highest winds. The fast moving, more compact system that followed and passed to the south produced much stronger winds. The cyclone subsequently stalled and weakened in the east Greenland waters (**Figure 25** and **Figure 26**).

**Northeastern Atlantic Storms, January 7-10:**

The first of two fast moving intense cyclones crossing the central and northeast Atlantic waters originated as the low pressure wave off the U.S. East Coast which raced northeast and approached the British Isles in two days (**Figure 24** and **Figure 25**). The cyclone appears at maximum intensity in **Figure 25**. It was remarkable in that it produced the strongest winds seen in ASCAT imagery during the period. The ASCAT (METOP-B) image in **Figure 28** includes some 80 kts observations. **BATUK01** near 58N 3W reported west winds of 60 kts at 0700 UTC on the 9th.
The **GLOBAL PRODUCER** (ZQSD5) at 58.3N 0.8W encountered seas to 13.5 m (44 ft) at 1000 UTC on the 9th. The platform 62114 (58.3N 0.8W) reported west winds of 60 kts at 0700 UTC on the 9th. Buoy 62161 (58.4N 1.2E) reported seas as high as 9.5 m (31 ft) three hours later. The cyclone weakened after passing north of Scotland early on the 9th and then moved inland later that day. The second cyclone originated over northern New England early on the 7th and moved quickly offshore, passing just south of the island of Newfoundland early on the 8th. The **APL EGYPT** (A8BZ6) near 40N 50W encountered southwest winds of 45 kts and 8.5 m seas (28 ft) at 1400 UTC on the 8th. The low center then rapidly intensified after passing over the central waters, and developed hurricane force winds with a 953 hPa center near the Norwegian coast (**Figures 25** and **Figure 26**). The central pressure fell 38 hPa in the twenty four hour period ending at 0600 UTC on the 10th. Scatterometer winds in the 50 to 65 kts range appear south and southwest of the center (**Figure 29**). The cyclone then moved inland and rapidly weakened the following night.

**Northwestern Atlantic Storm, January 9-11:**

**Figure 25** and **Figure 26** show low pressure moving from well inland over southern Canada to the Labrador Sea where it developed hurricane force winds on the 10th. An ASCAT-B pass from 2302 UTC on the 10th showed winds 50 to 60 kts on the south side of the center. The cyclone weakened to a gale while passing east of Greenland early on the 11th and then intensified again to a 960 hPa storm force low the following day (**Figure 30**). It then became absorbed by the second of two deep cyclones with pressures in the low 940s passing to the south 0600 UTC on the 15th, described below.

**Northeastern Atlantic Storm, January 11-13:**

A wave of low pressure over the north central waters rapidly intensified as it moved rapidly northeast over a 24 hour period (**Figure 30**) with the central pressure dropping 51 hPa. This was the first of two lows with pressures in the low 940s to move over the northeastern waters in close succession. Scatterometer imagery from 2040 UTC on the 12th (**Figure 31**) returned a swath of west winds 50 to 65 kts on the south side before the system departed the area via the Norwegian Sea and weakened to a gale.

**North Atlantic Storm, January 13-16:**

Just as the preceding event was reaching its maximum, the next developing low was inland over southern Quebec. It passed northeast of the island of Newfoundland early on January

13th and developed storm force winds out over the North Atlantic and hurricane force winds while approaching the British Isles on the 14th. The central pressure fell 42 hPa in the 24 hour period ending at 0600 UTC on the 14th. The lowest central pressure was 942 hPa, reached as the low passed just west of Scotland at 0600 UTC on the 15th. The ship **BATFR60** (48N 6W) reported south winds of 55 kts at 2200 UTC on the 14th. The vessel **BAREU12** (46N 21W) encountered northwest winds of 45 kts and 9.0 m seas (30 ft) at 1800 UTC on the 14th. Buoy 62023 (51.4N 7.8W) reported southwest winds of 55 kts with gusts to 69 kts and 8.2 m seas (27 ft) three hours later. Buoy 62081 (51.1N 13.3W) reported seas of 11.0 m (36 feet) at 0400 UTC on the 15th. An ASCAT pass from 2224 UTC on the 14th showed a swath of west winds 50 to 60 kts west of Ireland and also detected some easterly winds to 50 kts on the north side of the cyclone. The system weakened as it passed north of the British Isles late on the 15th and weakened to a gale in the Norwegian Sea the following day.

**Northwestern Atlantic/ Davis Strait Storm, January 17-18:**

A developing low moved through Quebec and Labrador on January 16th and emerged in the Labrador Sea on the 17th as a storm force low. It then moved through the Davis Strait with a lowest central pressure of 972 hPa and briefly developed hurricane force winds late on the 17th (**Figure 32**). Rapid weakening followed early on the 18th as the cyclone passed north of the area.

**North Atlantic Storms, January 17-20:**

A complex low pressure system entering the Labrador Sea consolidated over a 24 hour period ending at 0000 UTC January 19th to form a deep 960 hPa low east of Greenland (**Figure 32**). The ASCAT-B pass in **Figure 33** reveals a broad swath of winds 50 kts or more that includes some 70 kts winds. A view of the north side of the cyclone in the same imagery shows winds 50 to 60 kts along the east Greenland coast. The ship **BAREU12** (46N 42W) reported west winds of 55 kts at 0600 UTC on the 18th.
The **MAERSK PEMBROKE** (PDHY) near 45N 47W encountered west winds of 40 kts and 9.8 m seas (32 ft) 12 hours later. The cyclone subsequently weakened to a storm force low in the east Greenland waters on the 19th as a new low formed to the west later on the 29th and briefly developed hurricane force winds the following night. The system resumed weakening on the 20th with winds diminishing to gale force.

**North Atlantic Storms, January 23-28:**

An initial development consisted of a low pressure wave near Cape Hatteras early on January 22nd which intensified as it moved offshore and developed storm force winds and a pressure of 985 hPa as it passed south of Nova Scotia at 0600 UTC on the 23rd before moving across Newfoundland and temporarily weakening to a gale. ASCAT-B imagery from 0131 UTC on the 23rd revealed winds 50 to 55 kts on the west side and some of the buoy and platform observations listed in **Table 2** indicate this cyclone approached hurricane force while in the southwestern waters. After weakening in the Labrador Sea late on the 23rd, the cyclone re intensified to a storm force low as it passed east of Greenland, and its lowest central pressure of 955 hPa came after it passed northeast of Iceland on the 25th. The subsequent development of a stronger system is depicted in **Figure 34**. Originating over the southeast U.S., a low pressure wave rapidly intensified over the southwestern waters where the central pressure fell 40 hPa in the 24 hour period ending at 0600 UTC on the 25th. The cyclone developed hurricane force winds at 0000 UTC on the 25th near the New England offshore waters and maintained these winds until it reached the Denmark Strait on the night of the 27th. **Figure 35** is an ASCAT image from 0031 UTC January 26th, just prior to when the system reached maximum intensity showing a partial view of winds to 50 kts north and south of the center, but there is no data available from the west side. The cyclone dissipated north of the area late on the 28th. (cont. Page 49)

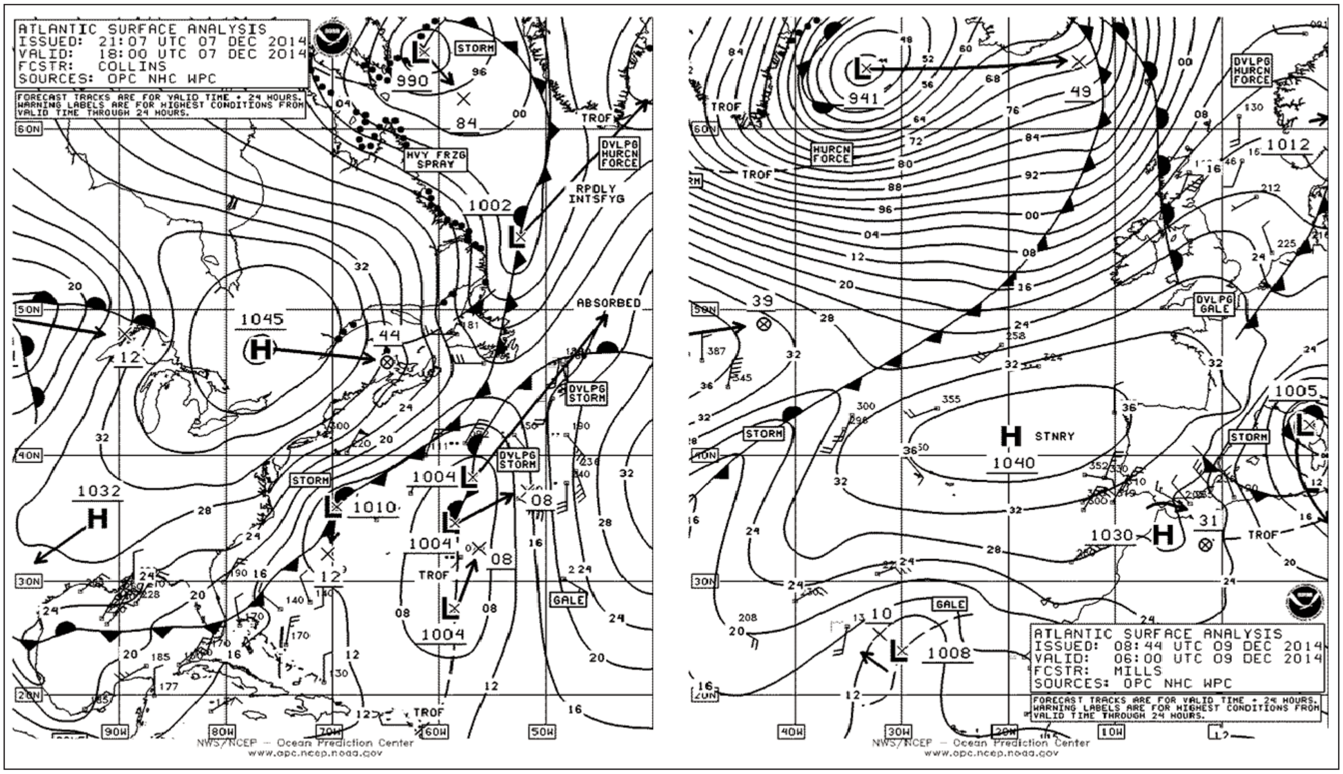


**Figure 19. OPC North Atlantic Surface Analysis charts valid 1800 UTC December 7 (Part 2) and 0600 UTC December 9, 2014 (Part 1).**

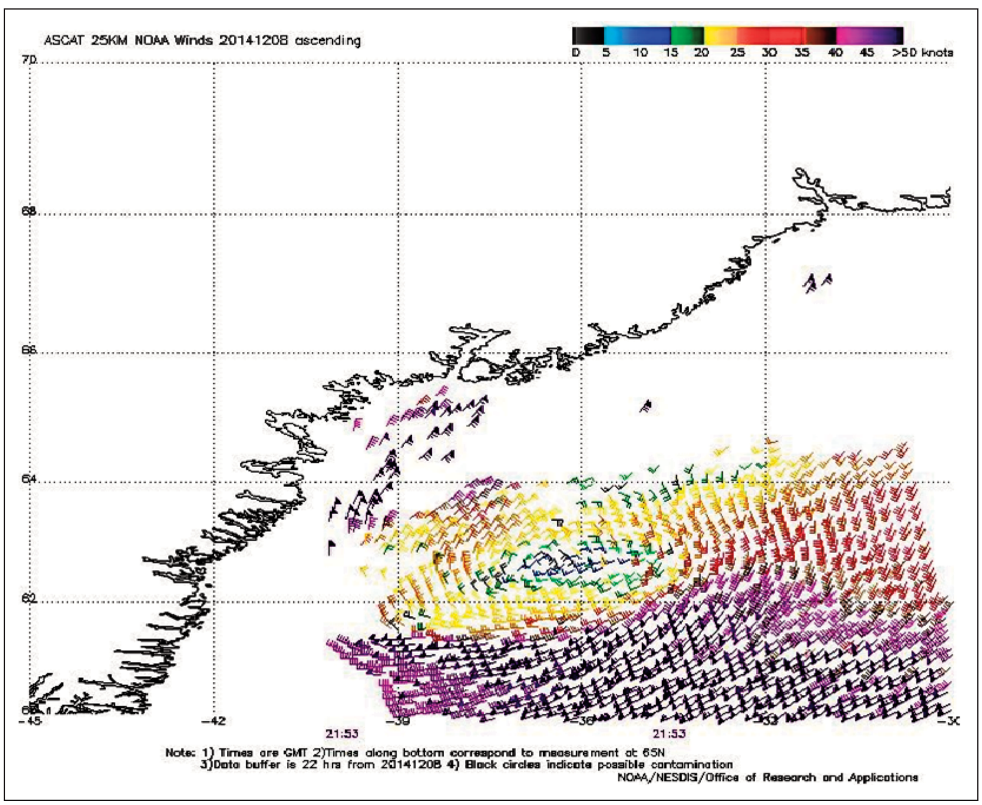


**Figure 20. ASCAT (METOP-A) image of satellite-sensed winds with 25-km resolution around the cyclone shown in the second part of Figure 19. The valid time of the pass is 2153 UTC December 8, 2014, or about eight hours prior to the valid time of the second part of Figure 19. Imagery is courtesy of NOAA/NESDIS/ Center for Satellite Applications and Research.**

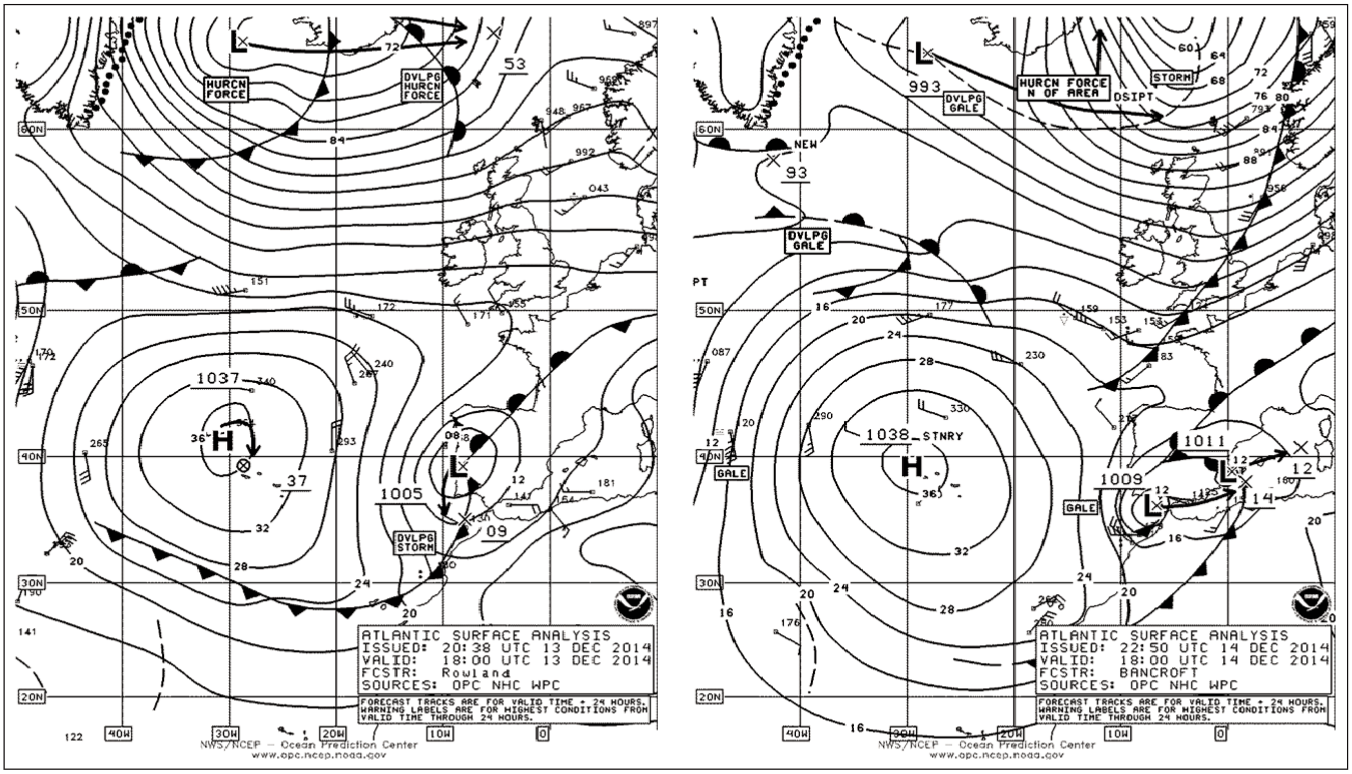


**Figure 21. OPC North Atlantic Surface Analysis charts (Part 1) valid 1800 UTC December 13 and 14, 2014.**

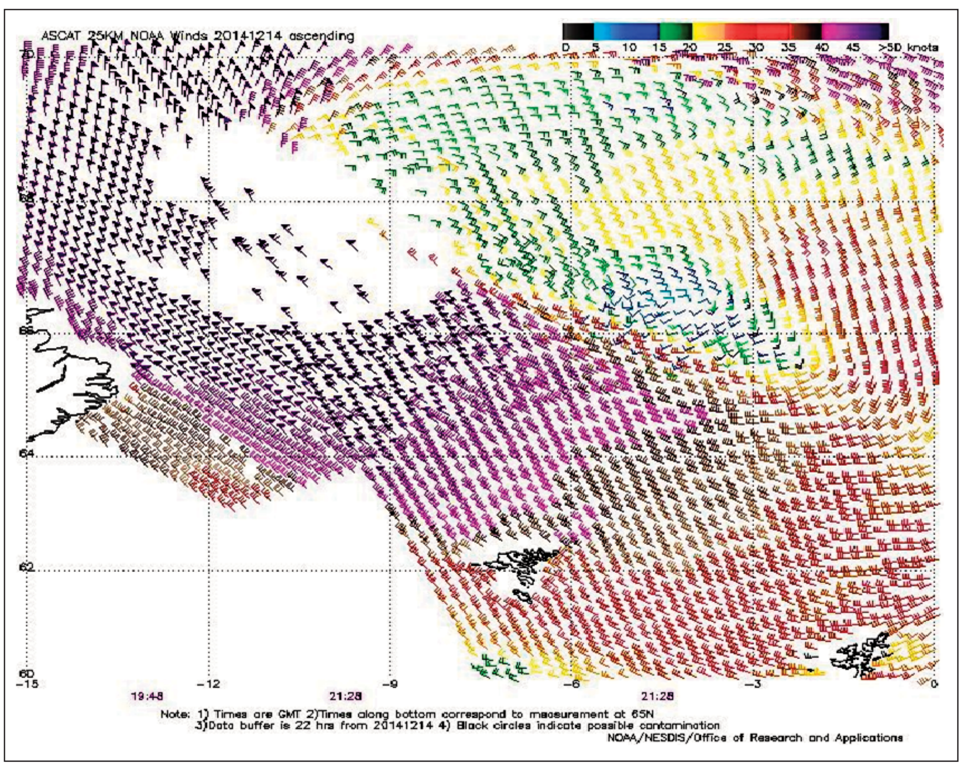


**Figure 22. ASCAT (METOP-A) image of satellite-sensed winds with 25-km resolution around the cyclone shown in the second part of Figure 21. The center of the cyclone is northeast of Iceland, a part of which appears on the left side of the image. The valid times of the passes are 1948 UTC and 2128 UTC December 14, 2014, or one and three-quarters to three and one half hours later than the valid time of the second part of Figure 21. Imagery is courtesy of NOAA/NESDIS/ Center for Satellite Applications and Research.**

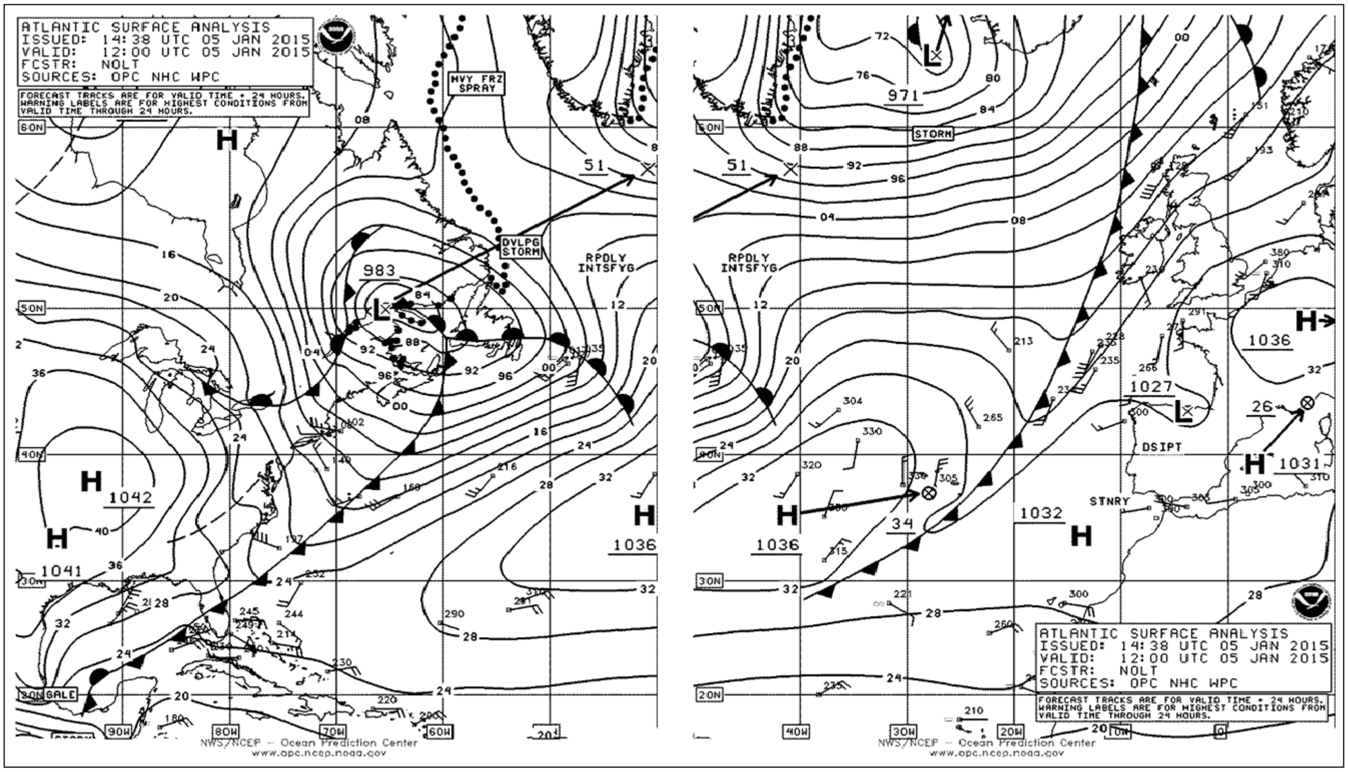


**Figure 23. OPC North Atlantic Surface Analysis charts (Parts 1 and 2) valid 1200 UTC January 5, 2015. The two parts overlap between 40W and 50W.**

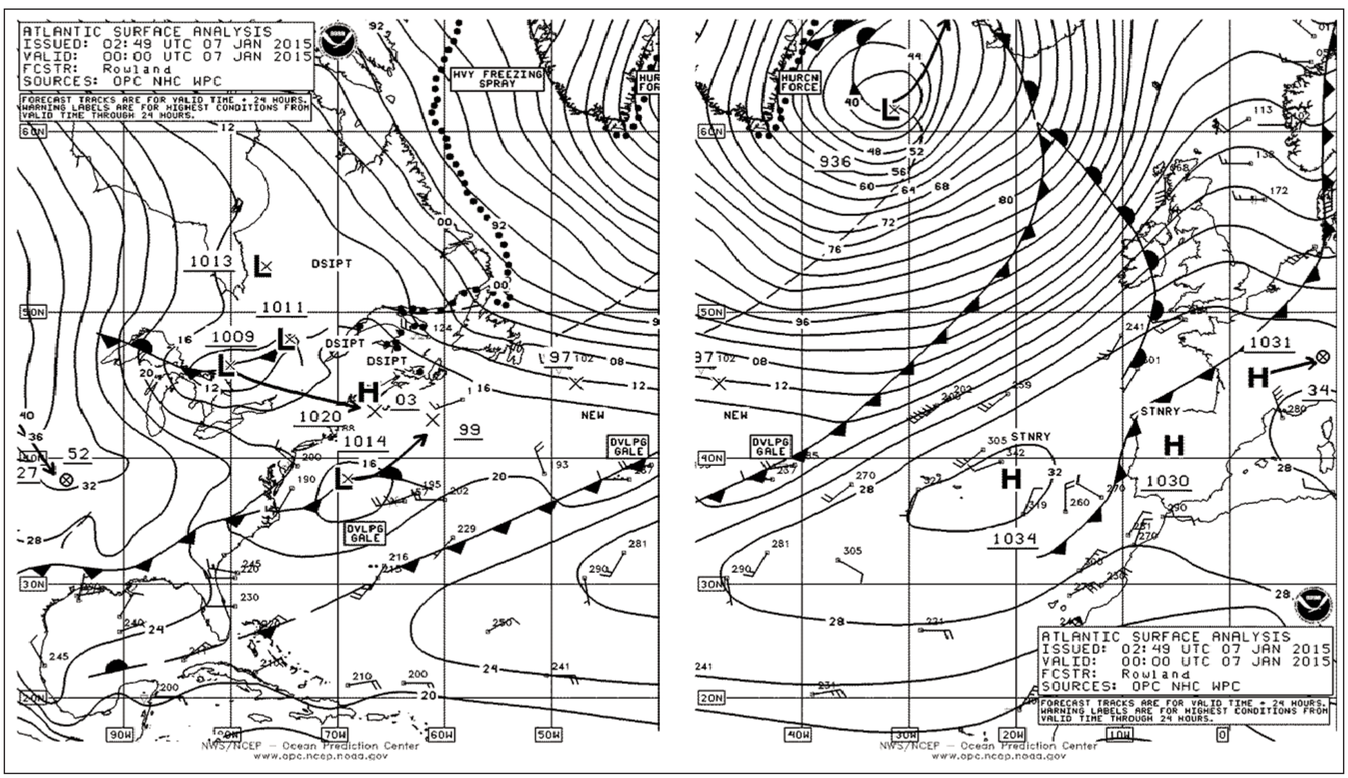


**Figure 24. OPC North Atlantic Surface Analysis charts (Parts 1 and 2) valid 0000 UTC January 7, 2015. The two parts overlap between 40W and 50W.**

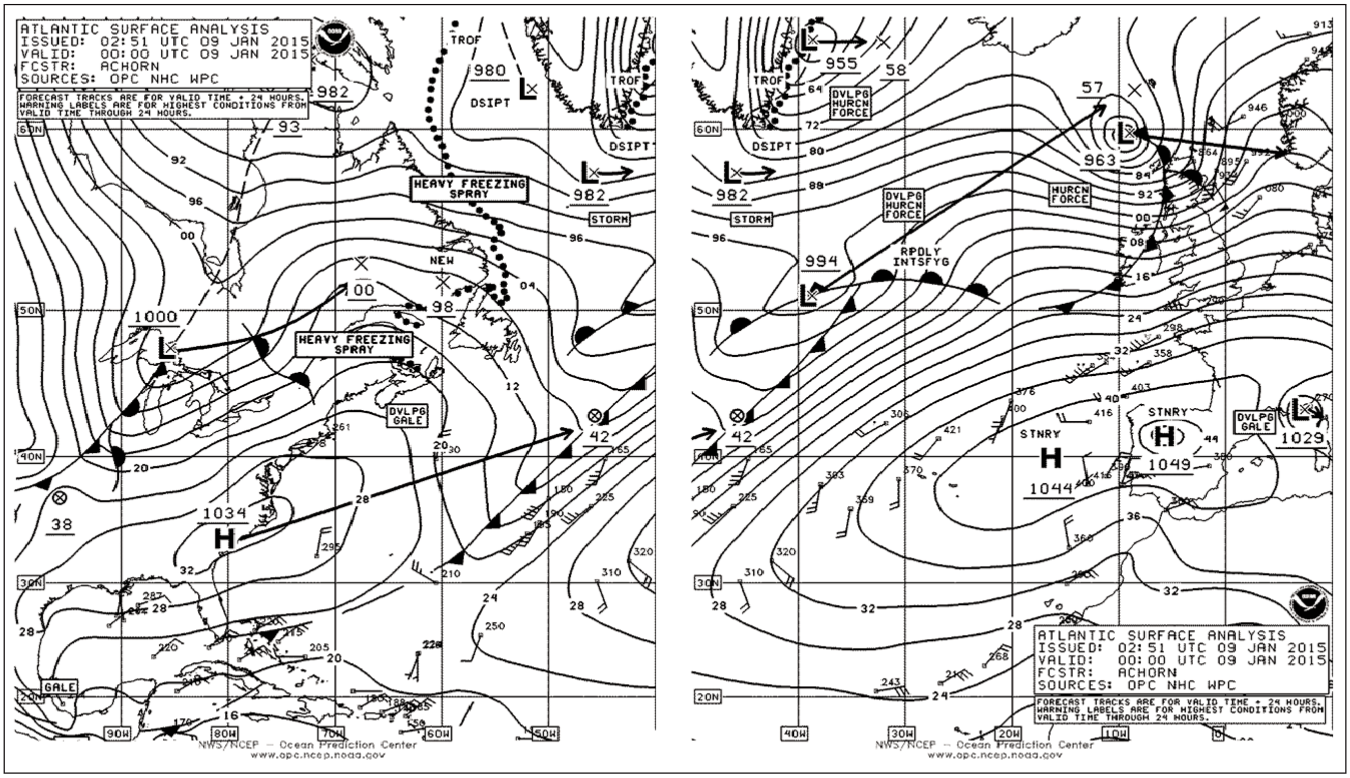


**Figure 25. OPC North Atlantic Surface Analysis charts (Parts 1 and 2) valid 0000 UTC January 9, 2015. The two parts overlap between 40W and 50W.**

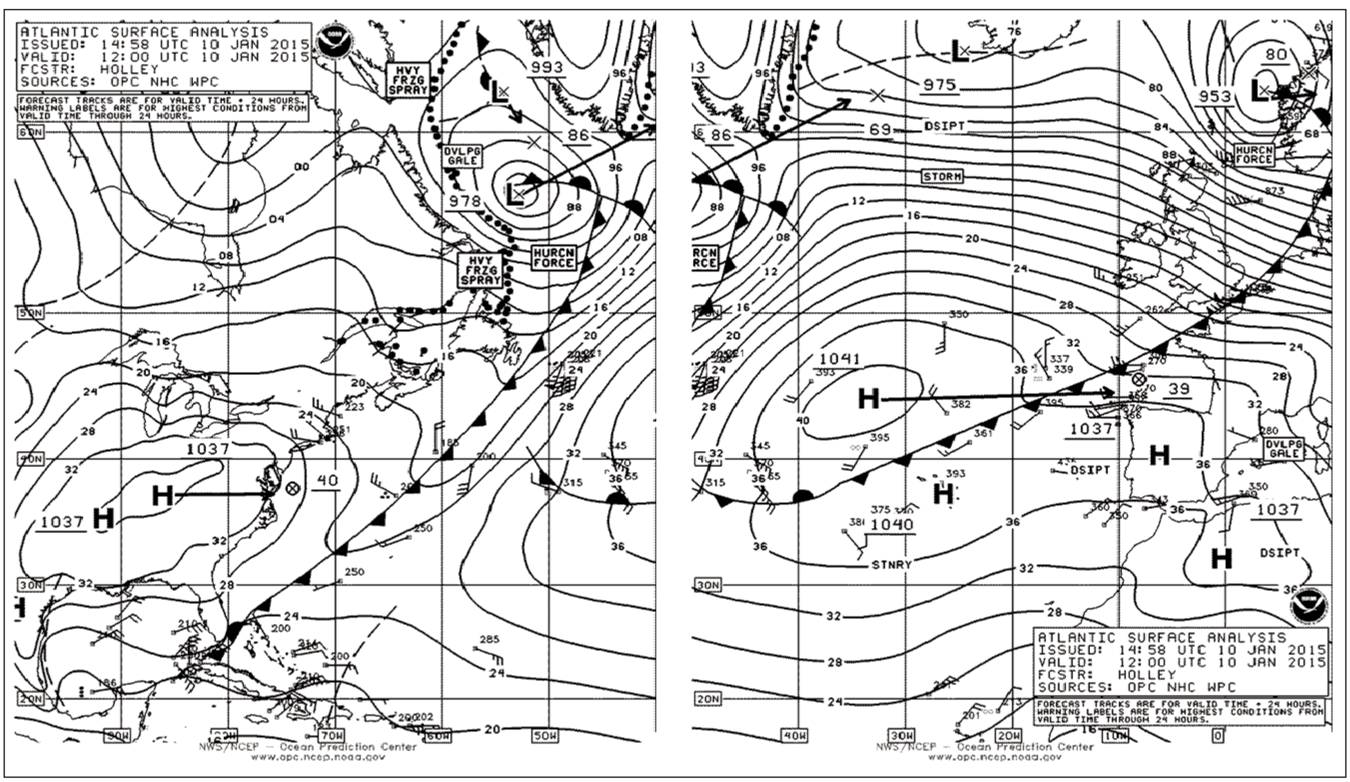


**Figure 26. OPC North Atlantic Surface Analysis charts (Parts 1 and 2) valid 1200 UTC January 10, 2015. The two parts overlap between 40W and 50W.**

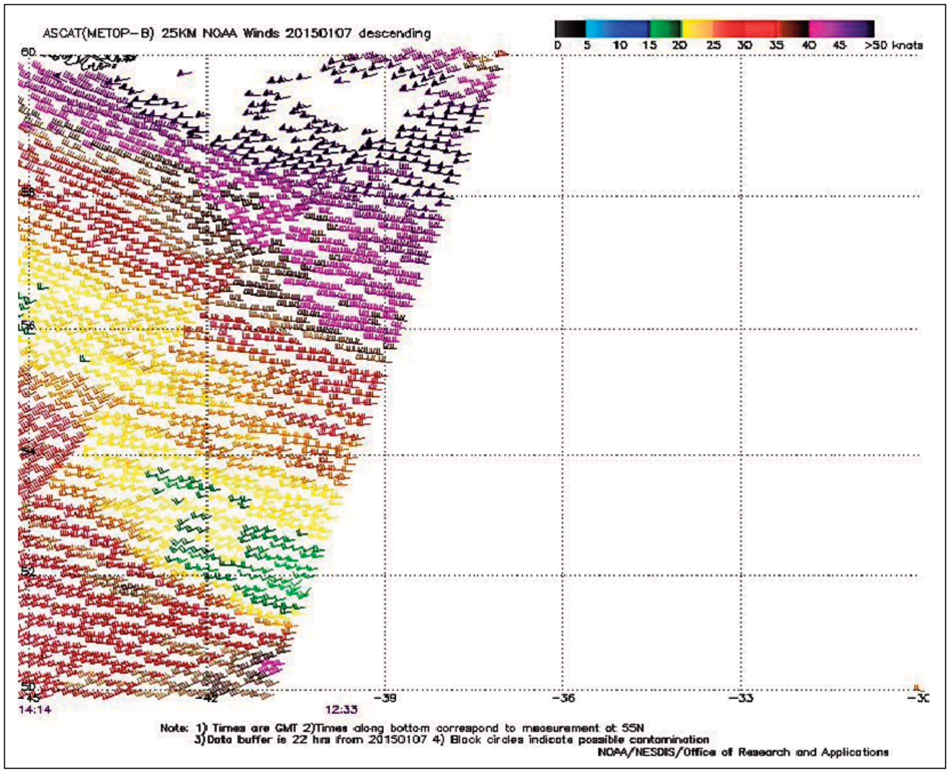


**Figure 27. ASCAT (METOP-B) image of satellite-sensed winds with 25-km resolution around the south side of the hurricane-force low shown in Figure 24. The southern tip of Greenland appears near the upper-left corner of the image. Portions of two passes are shown (1233 and 1414 UTC January 7, 2015). The valid time of the earlier (eastern) pass is about twelve and one-half hours later than the valid time of Figure 24. Imagery is courtesy of NOAA/NESDIS/ Center for Satellite Applications and Research.**

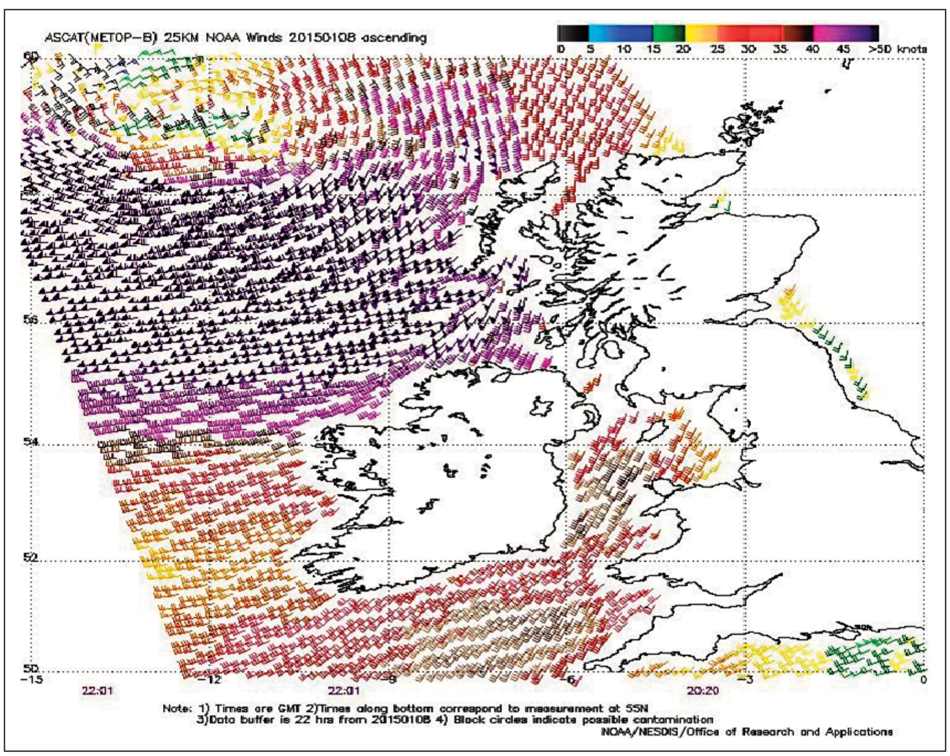


**Figure 28. ASCAT (METOP-B) image of satellite-sensed winds with 25-km resolution around the hurricane-force low northwest of the British Isles shown in Figure 25. The valid time of the pass containing wind retrievals of 50 kt or higher is 2201 UTC January 8, 2015, or two hours prior to the valid time of Figure 25. Image is credited to NOAA/NESDIS/ Center for Satellite Applications and Research.**

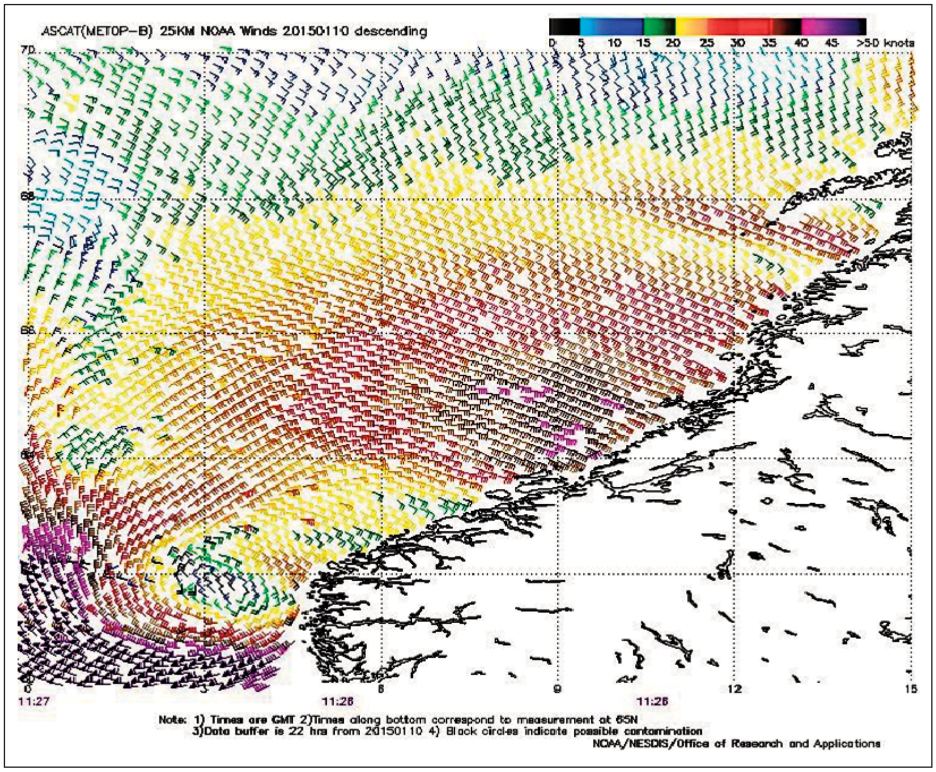


**Figure 29. ASCAT (METOP-B) image of satellite-sensed winds with 25-km resolution around the hurricane-force low near Norway shown in Figure 26. The valid time of the pass is 1127 UTC January 10, 2015, or about one-half hour prior to the valid time of Figure 25. Image is credited to NOAA/NESDIS/ Center for Satellite Applications and Research.**

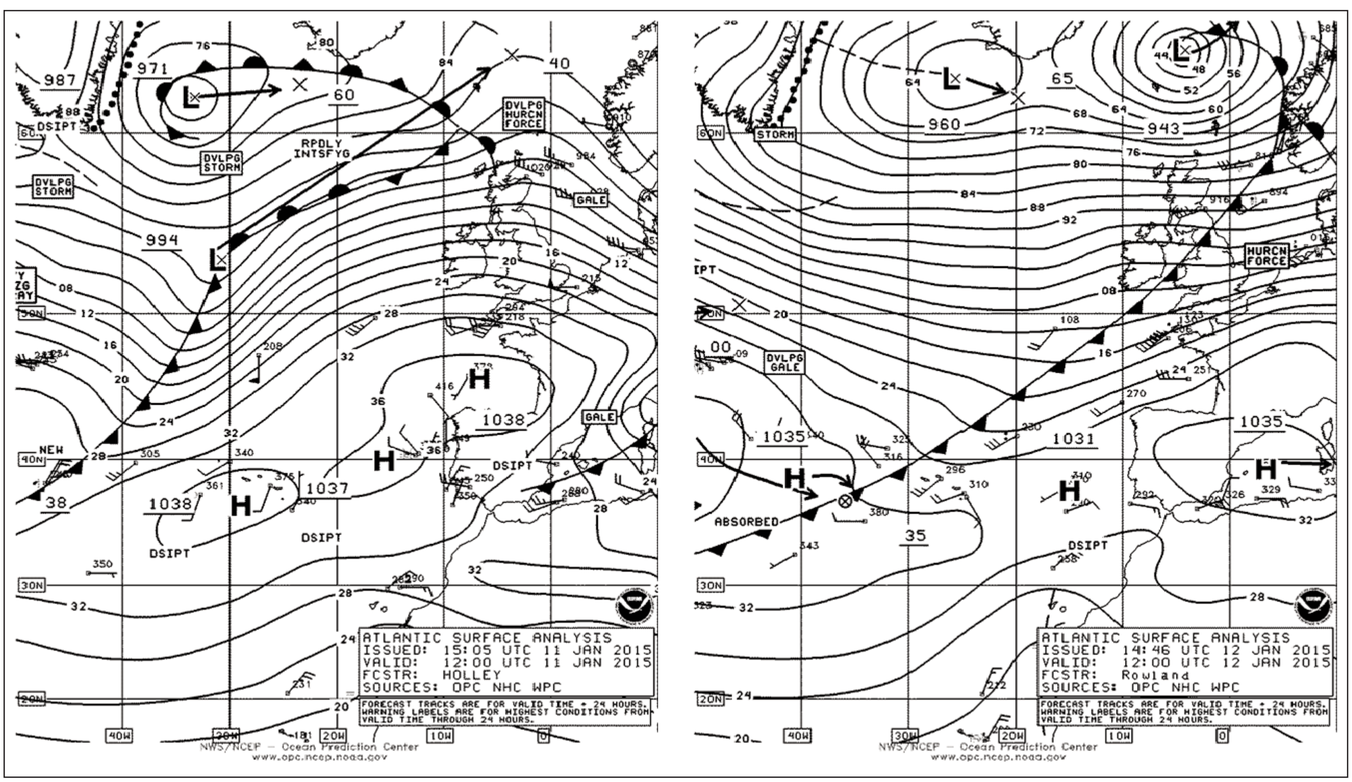


**Figure 30. PC North Atlantic Surface Analysis charts (Part 1) valid 1200 UTC January 11 and 12, 2015.**

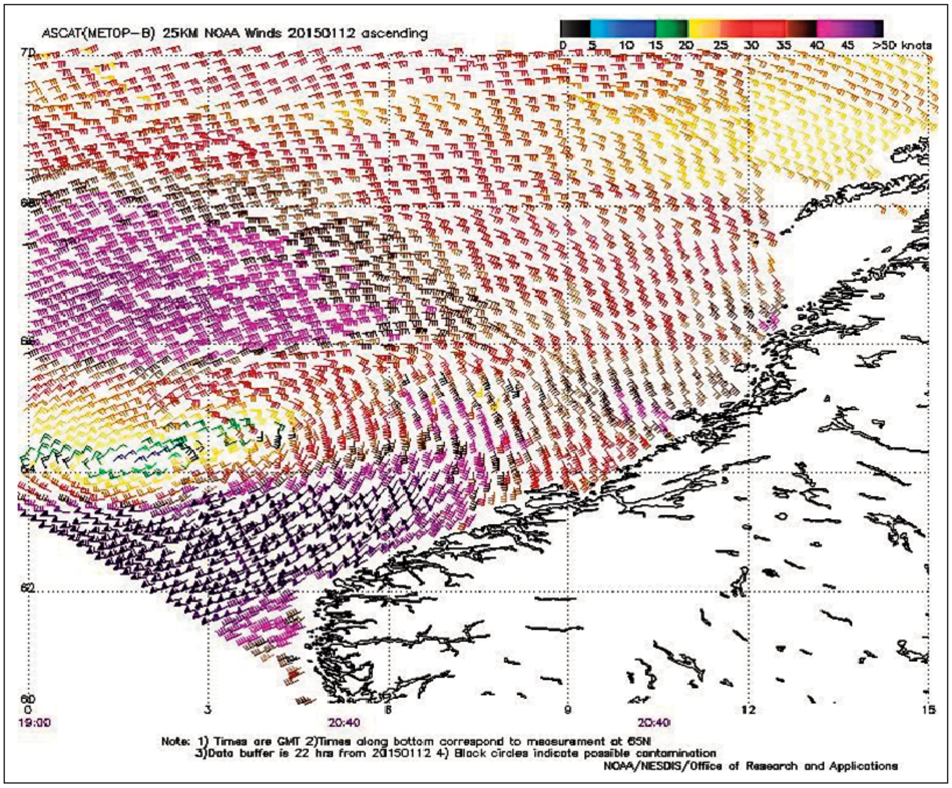


**Figure 31. ASCAT (METOP-B) image of satellite-sensed winds with 25-km resolution around the hurricane-force low shown in the second part of Figure 30. The valid time of the pass is 2040 UTC January 12, 2015, or about eight and three quarters hours later than the valid time of the second part Figure 30. Image is credited to NOAA/NESDIS/ Center for Satellite Applications and Research.**

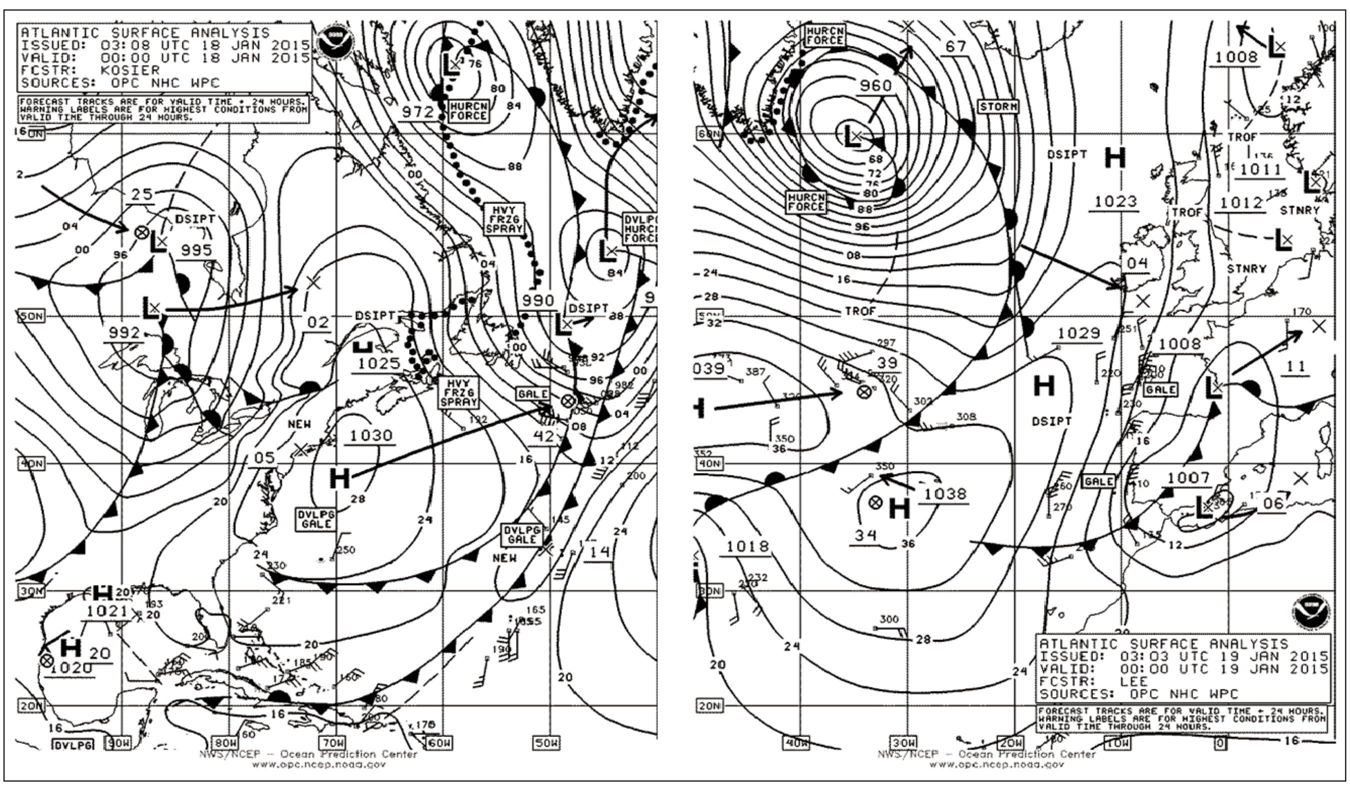


**Figure 32. OPC North Atlantic Surface Analysis charts valid 0000 UTC January 18 (Part 2) and 0000 UTC January 19, 2015 (Part 1).**

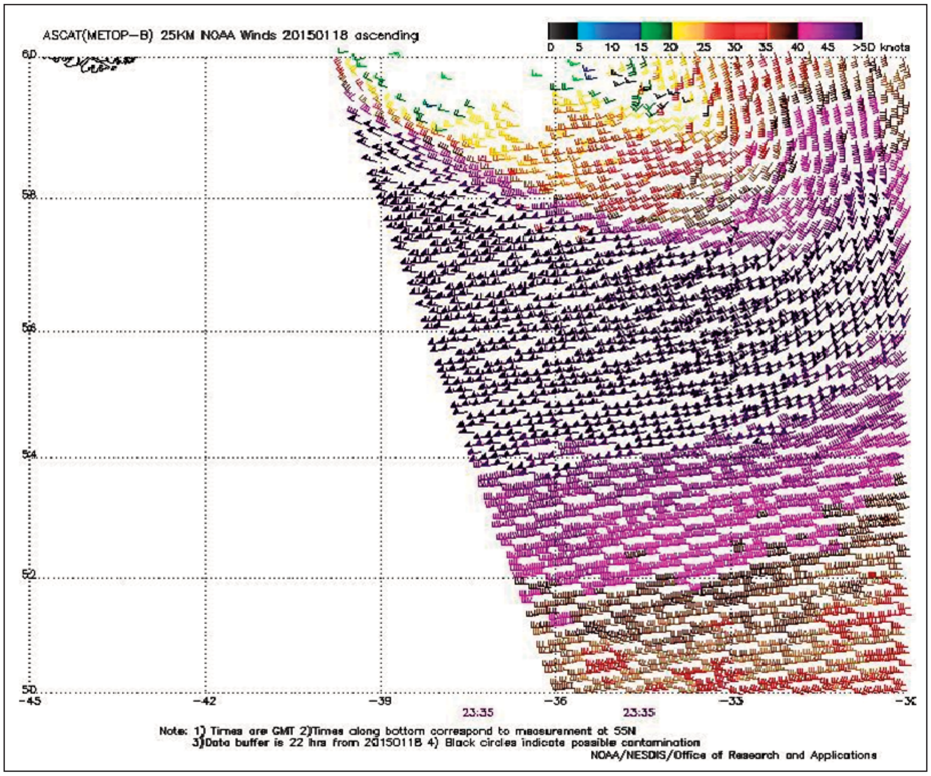


**Figure 33. ASCAT (METOP-B) image of satellite-sensed winds with 25-km resolution around the south semicircle of the hurricane-force low shown in the second part of Figure 32. The valid time of the pass is 2335 UTC January 18, 2015, or about one-half hour prior to the valid time of the second part Figure 32. The southern tip of Greenland appears near the upper-left corner of the figure. Image is courtesy of NOAA/NESDIS/ Center for Satellite Applications and Research.**

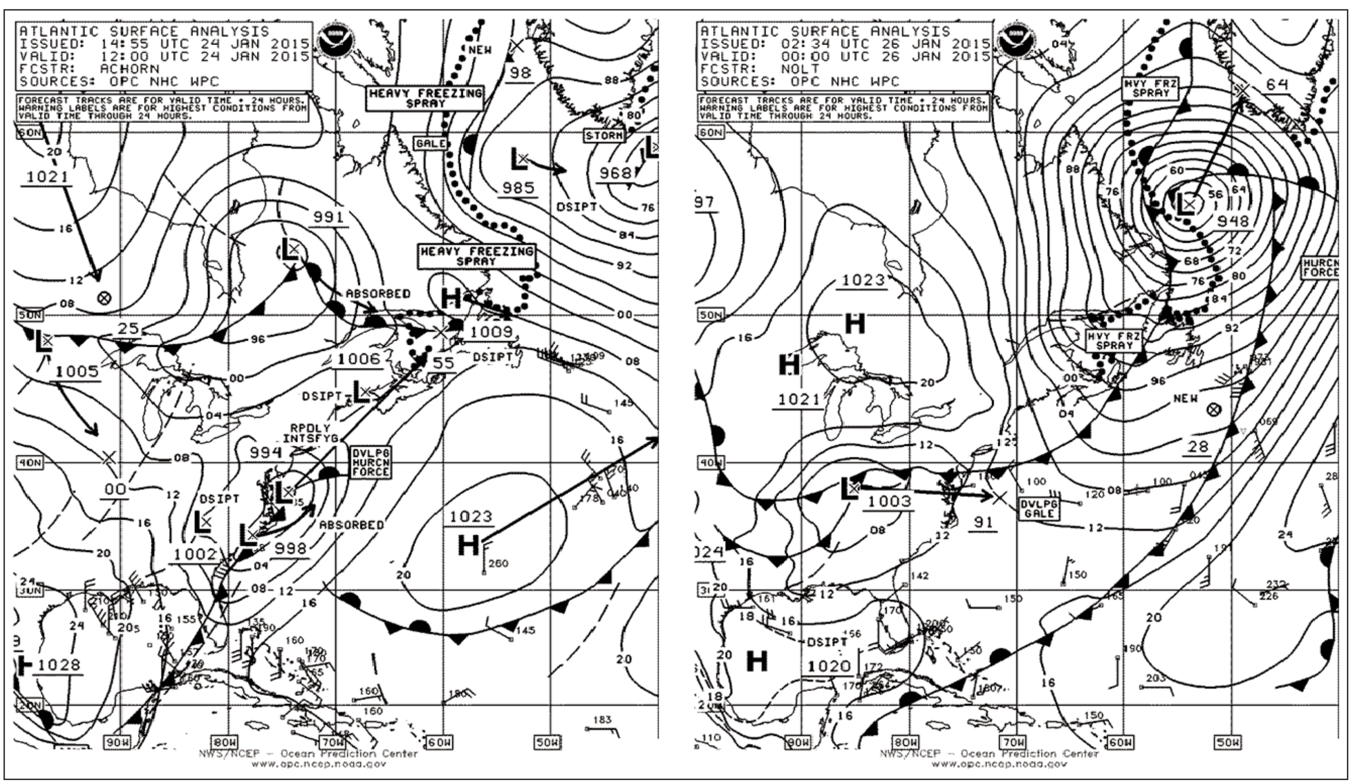


**Figure 34. OPC North Atlantic Surface Analysis charts (Part 2) valid 1200 UTC January 24 and 0000 UTC January 26, 2015.**

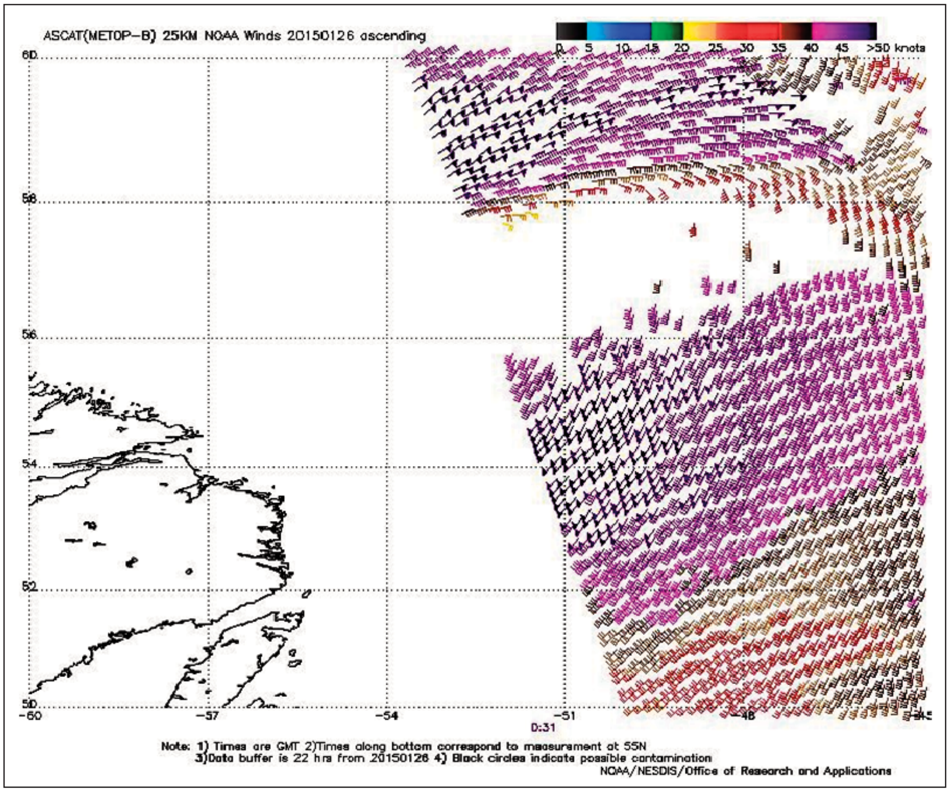


**Figure 35. ASCAT (METOP-B) image of satellite-sensed winds with 25-km resolution around the eastern semicircle of the hurricane-force cyclone shown in the second part of Figure 34. The valid time of the pass is 0031 UTC January 26, 2015, or about one-half hour later than the valid time of the second part Figure 34. Portions of Labrador and the island of Newfoundland appear in the lower-left side of the image. Image is courtesy of NOAA/NESDIS/ Center for Satellite Applications and Research.**

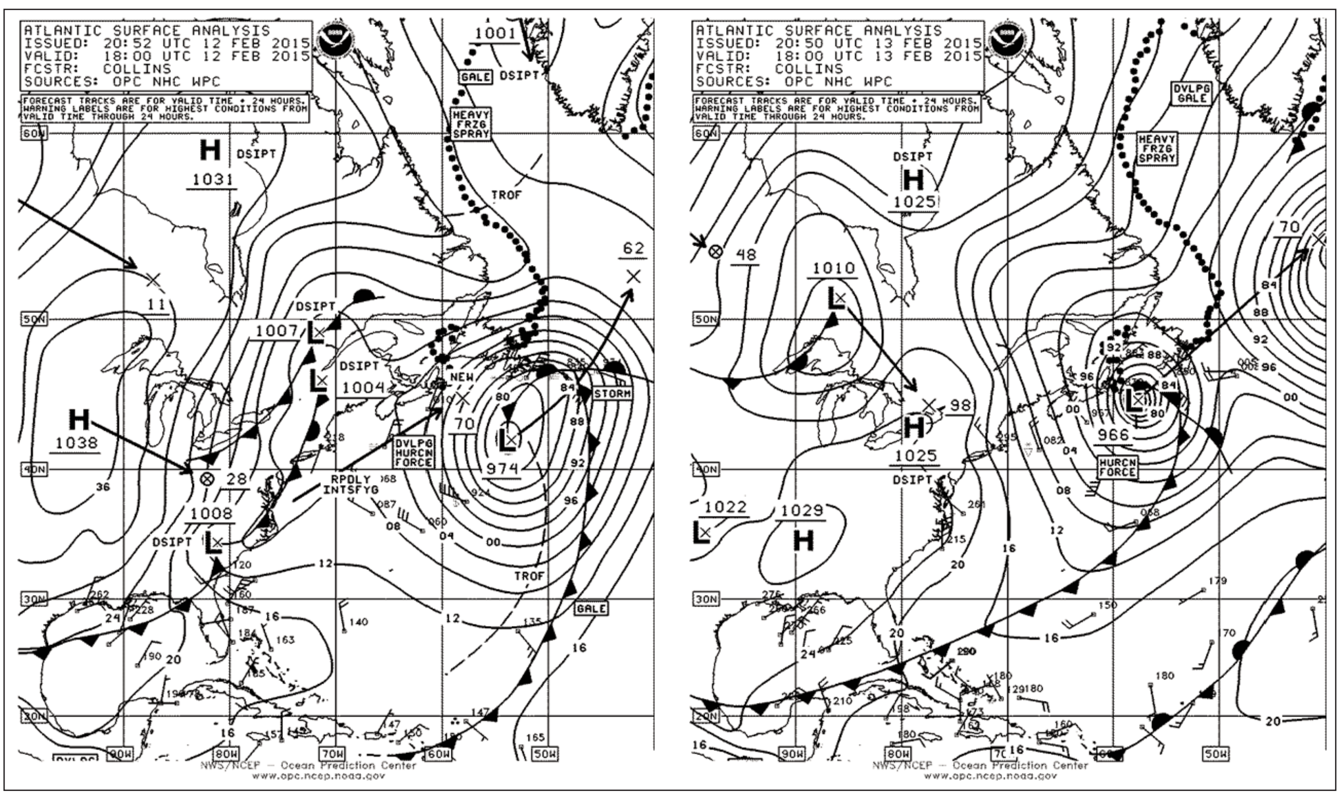


**Figure 36. OPC North Atlantic Surface Analysis charts (Part 2) valid 1800 UTC February 12 and 13, 2015.**

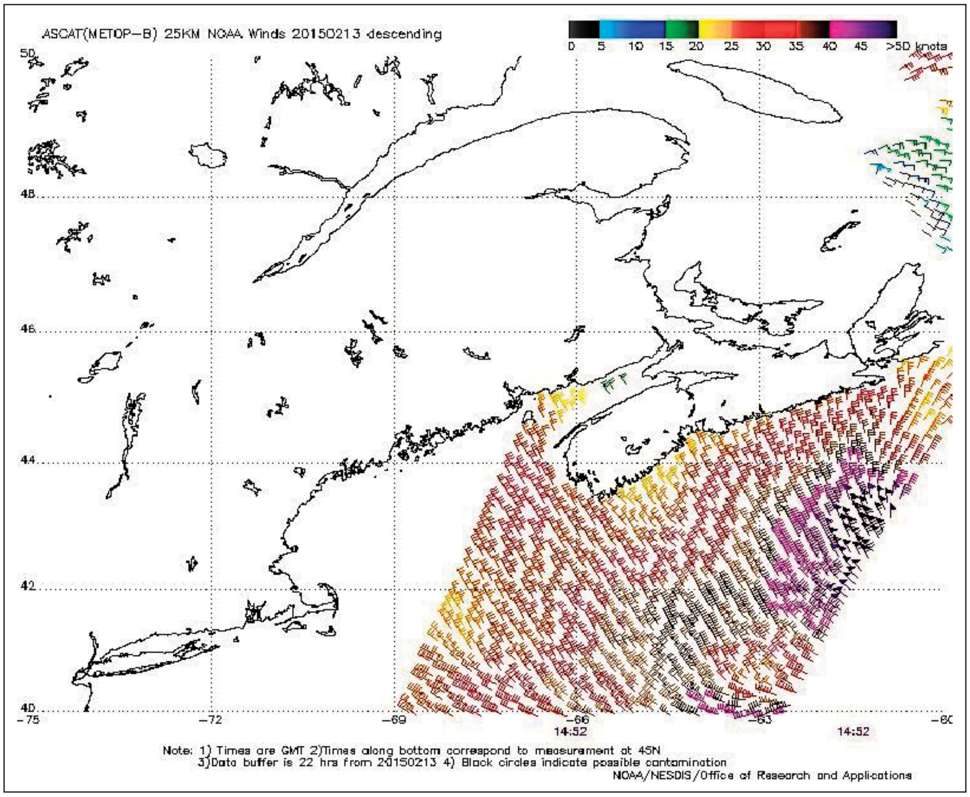


**Figure 37. ASCAT (METOP-B) image of satellite-sensed winds with 25-km resolution around the west side of the hurricane-force cyclone shown in the second part of Figure 36. The valid time of the pass is 1452 UTC February 13, 2015, or about three hours prior to the valid time of the second part Figure 36. Image is courtesy of NOAA/NESDIS/ Center for Satellite Applications and Research.**

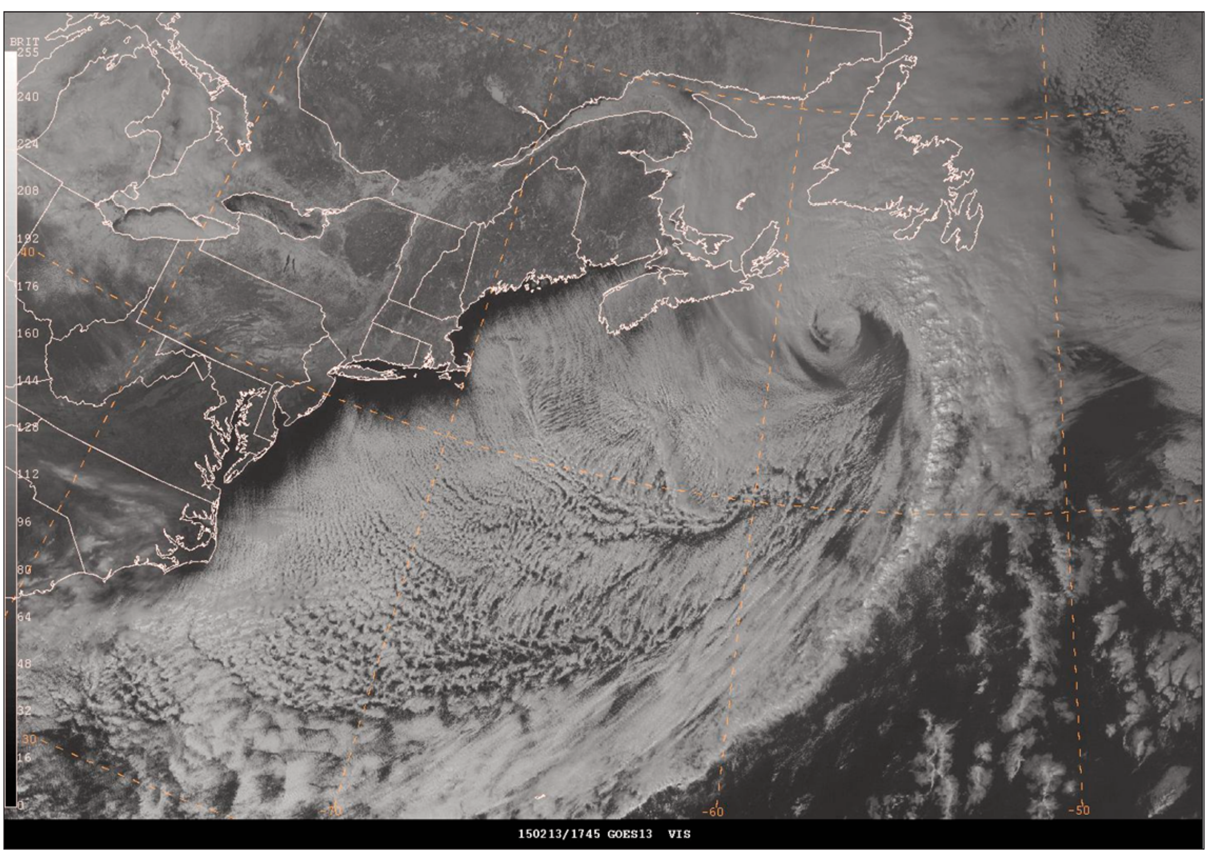


**Figure 38. GOES-13 visible satellite image valid at 1745 UTC February 13, 2015.**

**Western North Atlantic Storm, February 2-4:**

An intensifying area of low pressure moved off the New Jersey coast already as a storm force low on the afternoon of February 2nd and developed central pressures in the 970s while passing just south of and then over the Canadian Atlantic provinces late on the 2nd and during the following night. The cyclone developed a lowest central pressure of 964 hPa while briefly developing hurricane force winds in the Labrador Sea at 0600 UTC on the 4th. An ASCAT-B pass from 0045 UTC on the 4th with limited coverage due to sea ice returned an area of south winds 50 to 55 kts off the southern Labrador coast.

The **BRITISH INTEGRITY** (MGGF9) near 46N 55W reported south winds of 50 kts and 4.5 m seas (15 ft) at 1400 UTC on the 3rd. The platform **HIBERNIA** (46.7N 48.7W) reported south winds of 65 kts (anemometer height 139 m) at 2100 UTC on the 3rd and seas of 5.2 m (17 ft) three hours later, while **TERRA NOVA FPSO** (VCXF, 46.4N 48.4W) encountered south winds of 50 kts at a height of 53 m. Buoy 44137 (42.3N 62.0W) reported south winds of 45 kts with gusts to 58 kts at 0700 UTC on the 3rd, and maximum significant wave heights of 9.0 m (30 ft) four hours later. The cyclone subsequently moved into the Davis Strait and rapidly weakened late on the 4th.

| Observation | Position | Date / Time UTC | Wind Speed, kts | Seas (m/ft) |
|---|---|---|---|---|
| Ship CFL24 | 43.8N 60.6W | 22/2200 | NE 62 | N/A |
| | | 23/0300 | NW 57 | 6.0/20 |
| | | 23/0400 | | 7.5/25 |
| Thebaud Platform | 43.9N 60.2W | 23/0000 | NE 51 G62 | N/A |
| (CFO383) | | 23/0300 | NW 60 G72 | N/A |
| Buoy 44141 | 43.0N 58.0W | 23/0600 | W 47 G58 | 8.0/26 |
| | | 23/0700 | | 8.5/28 |
| | | 25/0900 | | Maximum 9.0/30 |
| Buoy 41002 | 31.9N 74.8W | 24/1700 | SW 35 G49 | 4.5/15 |
| | | 24/1900 | Peak Gust 62 | 5.0/16 |
| Buoy 41025 | 35.0 75.4W | 24/1000 | SW 37 G49 | 6.0/20 |
| | | 24/1100 | Peak Gust 60 | 6.5/21 |
| Buoy 44139 | 44.2N 57.1W | 25/1000 | S 39 G51 | 7.0/23 |
| | | 25/1700 | | Maximum 9.5/31 |
| Buoy 44037 | 43.5N 67.9W | 27/1800 | NE 45 G56 | 9.0/30 |
| | | 28/0000 | | Maximum 10.0/33 |
| Buoy 44024 | 42.3N 65.9W | 27/1100 | NE 49 G64 | N/A |
| | | 27/2000 | | 9.0/30 |
| Buoy 44008 | 40.5N 69.2W | 27/0800 | NE 45 G58 | 8.5/28 |
| | | 27/0700 | Peak Gust 60 | N/A |

**Table 2. Selected platform and buoy observations taken during the North Atlantic storms of January 23-28, 2015.**

| Observation | Position | Date / Time UTC | Wind Speed, kts | Seas (m/ft) |
|---|---|---|---|---|
| Buoy 44005 | 43.2N 69.1W | 27/1100 | NE 43 G54 | 9.0/30 |
| | | 27/2100 | | Maximum 11.5/38 |

**Table 2. (cont.) Selected platform and buoy observations taken during the North Atlantic storms of January 23-28, 2015.**

### North Atlantic Storm, February 11-13:

A gale force low moved northeast off the U.S. mid Atlantic coast early on February 9th with slow strengthening through the night of the 10th, and then rapid intensification after passing the Grand Banks on the 11th. The central pressure fell 19 hPa in only a twelve hour period ending at 0600 UTC on the 12th, when it developed a lowest central pressure of 973 hPa and hurricane force winds near 53N 33W. An ASCAT pass from 2248 UTC on the 11th revealed a compact circulation with retrieved winds of 50 to 55 kts on the south side close to the low center. The cyclone then moved east and maintained storm force winds until it reached the British Isles, when it weakened to a gale. It then dissipated over northern France early on the 15th.

### North Atlantic Storm, February 12-15:

A frontal wave of low pressure over the Carolinas moved offshore and rapidly intensified into a hurricane force low within the following 24 hour period (**Figure 36**). The central pressure fell 42 hPa during this period, impressive for that low latitude.Winds in its compact circulation reached at least 70 kts with the scatterometer imagery in **Figure 37** showing the strongest winds of 70 kts at the edge of the pass. The visible satellite image in **Figure 38** valid six hours prior to time of maximum intensity (962 hPa) shows a comma cloud pattern and well defined center of the cyclone and the lines of clouds forming to the west as cold air streams off the East Coast. The **MODU HENRY GOODRICH** (YJQN7, 46.1N 54.5W) reported northeast winds of 70 kts at 1800 UTC on the 12th. **THEBAUD PLATFORM** (CFO383, 43.9N 60.2W) encountered northwest winds of 56 kts with gusts to 72 kts at 1600 UTC on the 13th. Buoy 44141 (43.0N 58.0W) reported southwest winds of 55 kts with gusts to 72 kts at 1700 UTC on the 13th, and highest seas of 8.2 m (27 ft) five hours later. Buoy 44139 (44.2N 57.1W) reported southwest winds of 49 kts with gusts to 68 kts at 1900 UTC on the 13th, and seas of 7.5 m (25 ft) one hour later. The cyclone then passed north of the island of Newfoundland by the 14th with its top winds weakening to storm force, and on the 15th passed between Greenland and Iceland.

### Western North Atlantic Storm, February 14-17:

The next event followed closely behind the departing cyclone in the second part of **Figure 36**, originating as a coastal redevelopment of the low north of the Great Lakes. It briefly developed hurricane force winds with a new center near 41N 67W at 1800 UTC on the 15th. The system consolidated into a 958 hPa cyclone near 47N 61W 12 hours later. The **OLEANDER** (V7SX3) near 38N 71W reported northwest winds of 60 kts at 1800 UTC on the 15th. The **MONTE AZUL** (CQHQ) near 33N 65W encountered west winds of 50 kts and 10.7 m seas (35 ft) at 1800 UTC on the 15th. The **KAAN KALKAVAN** (TCTX2) reported west winds of 60 kts near 37N 56W at 2100 UTC on the 16th. Buoy 44037 (43.5N 67.9W) reported northwest winds of 54 kts with gusts to 68 kts at 2300 UTC on the 15th, and three hours prior, a gust of 74 kts and 7.5 m seas (25 ft). The cyclone subsequently passed north of the island of Newfoundland and weakened to a gale early on the 17th as new lows formed to the east and northeast.

### Northeastern Atlantic Storms, February 21-23:

Low pressure tracked from the northeastern U.S. early on February 10th to the Labrador coast early on the 21st, when it spawned a new low on the front

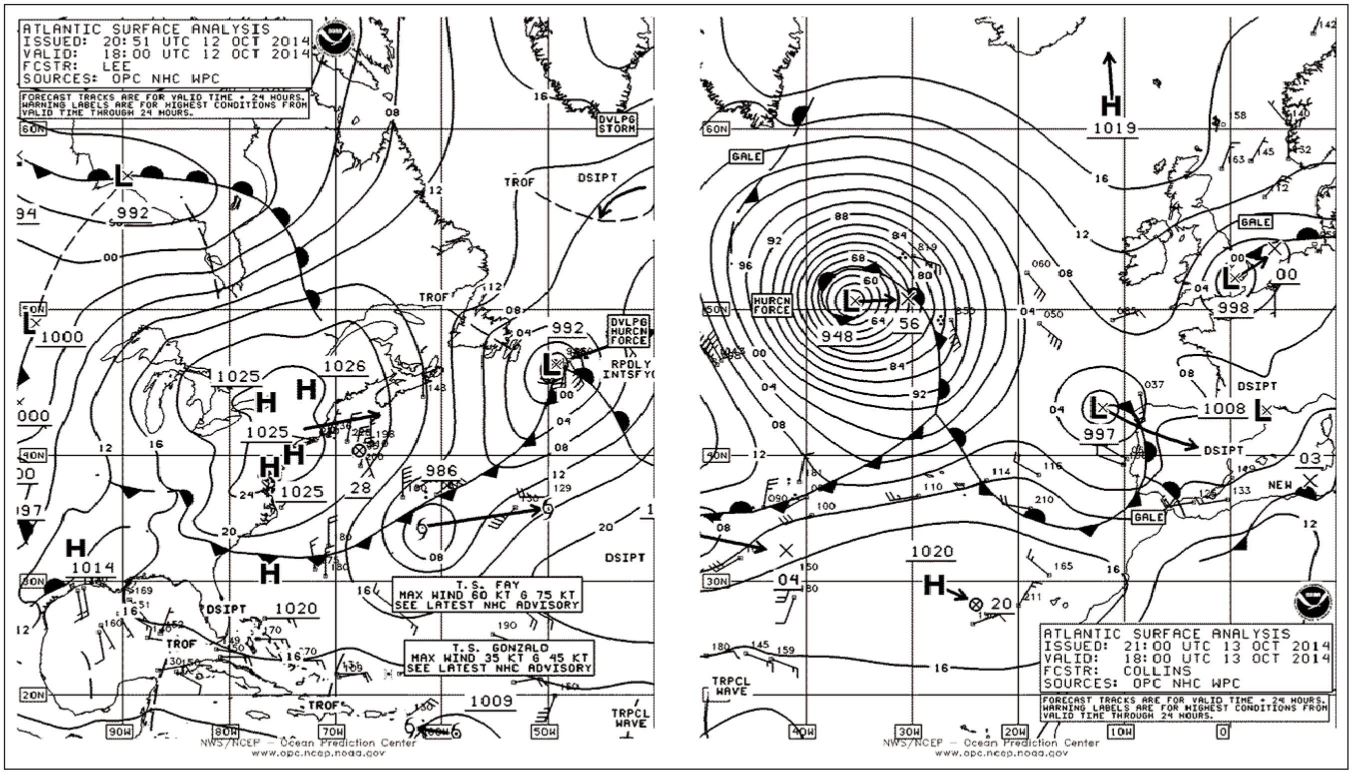


**Figure 39. OPC North Atlantic Surface Analysis charts valid 0600 UTC February 21 (Part 2) and 1800 UTC February 22, 2015 (Part 1).**

south of Greenland (**Figure 39**) which took over as the main low twenty four hours later. The new low deepened by 42 hPa in the twenty four hour period ending at 1200 UTC on the 22nd. The new low developed a lowest central pressure of 945 hPa 12 hours later, and it in turn formed a secondary cyclone on the front southeast of Iceland (**Figure 39**). The ASCAT image in **Figure 40** shows the well defined front south of Iceland as the main focus for hurricane force winds between the front and Iceland. Buoy 62081 (51.1N 13.3W) at 1800 UTC on the 23rd reported west winds of 38 kts with gusts to 55 kts and 13.5 m seas (45 ft).

The ship **AS VICTORIA** (A8SO7) near 48N 16W encountered west winds of 55 kts at 1800 UTC on the 23rd. The two lows merged near northern Scotland on the afternoon of the 23rd before weakening to a gale the next day and moving inland over Norway late on the 24th.

**North Atlantic Storms, February 25-27:**

Low pressure originating in the southern Labrador Sea on February 23rd moved north and rapidly intensified in the East Greenland Sea on the 25th (**Figure 41**) with the central pressure falling 39 hPa in the 24 hour period ending at 0000 UTC on the 26th. The cyclone appears at maximum intensity in the second part of **Figure 41**, making it the deepest February cyclone. Like the first of two fast moving cyclones on January 7-10 this cyclone produced winds as high as 80 kts detected by ASCAT (**Figure 42**). This intense system also generated hurricane force winds on the north side as well. The cyclone then continued to move northeast and weakened to a gale northeast of Iceland on the 27th. A second low forming off the North Carolina coast early on the 25th moved to the Gulf of St. Lawrence later that day and became a storm in the Labrador Sea on the 26th, and then briefly developed hurricane force winds with a 967 hPa center near 58N 43W at 0600 UTC on the 27th. An ASCAT-B pass from 2329 UTC on the 26th showed a swath of west to northwest winds of 50 to 55 kts off the southern Labrador coast. A weakening trend followed the next day.

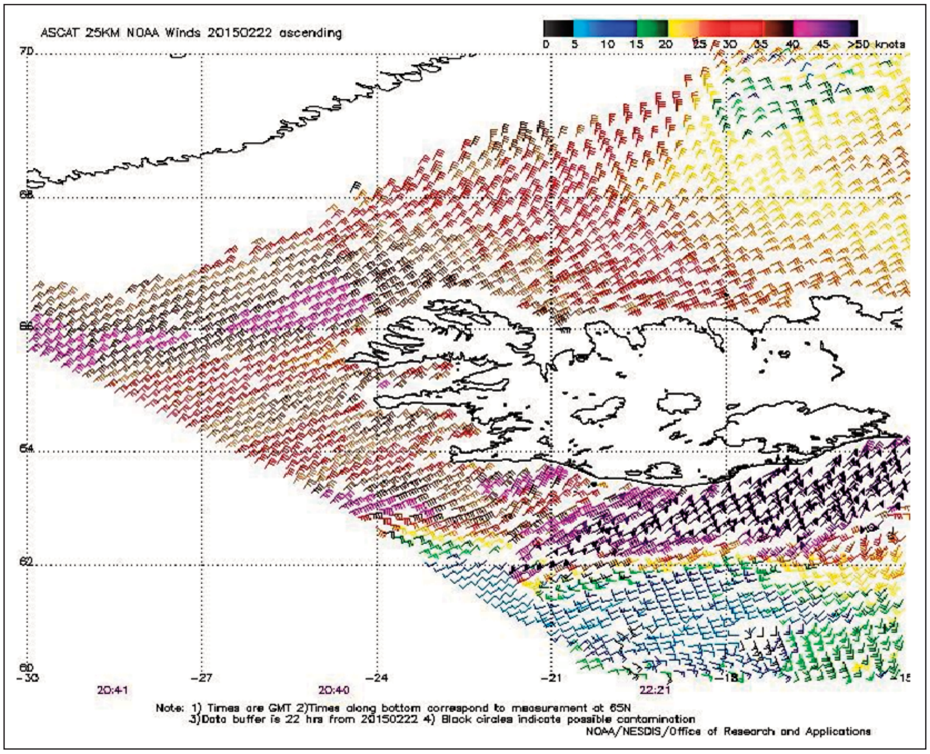


**Figure 40. ASCAT (METOP-B) image of satellite-sensed winds with 25-km resolution around the north side of the hurricane-force cyclone in the vicinity of Iceland, shown in the second part of Figure 39. The valid time of the pass containing the strongest winds is 2221 UTC February 22, 2015, or about four and one-half hours later than the valid time of the second part Figure 39. Image is courtesy of NOAA/NESDIS/ Center for Satellite Applications and Research.**

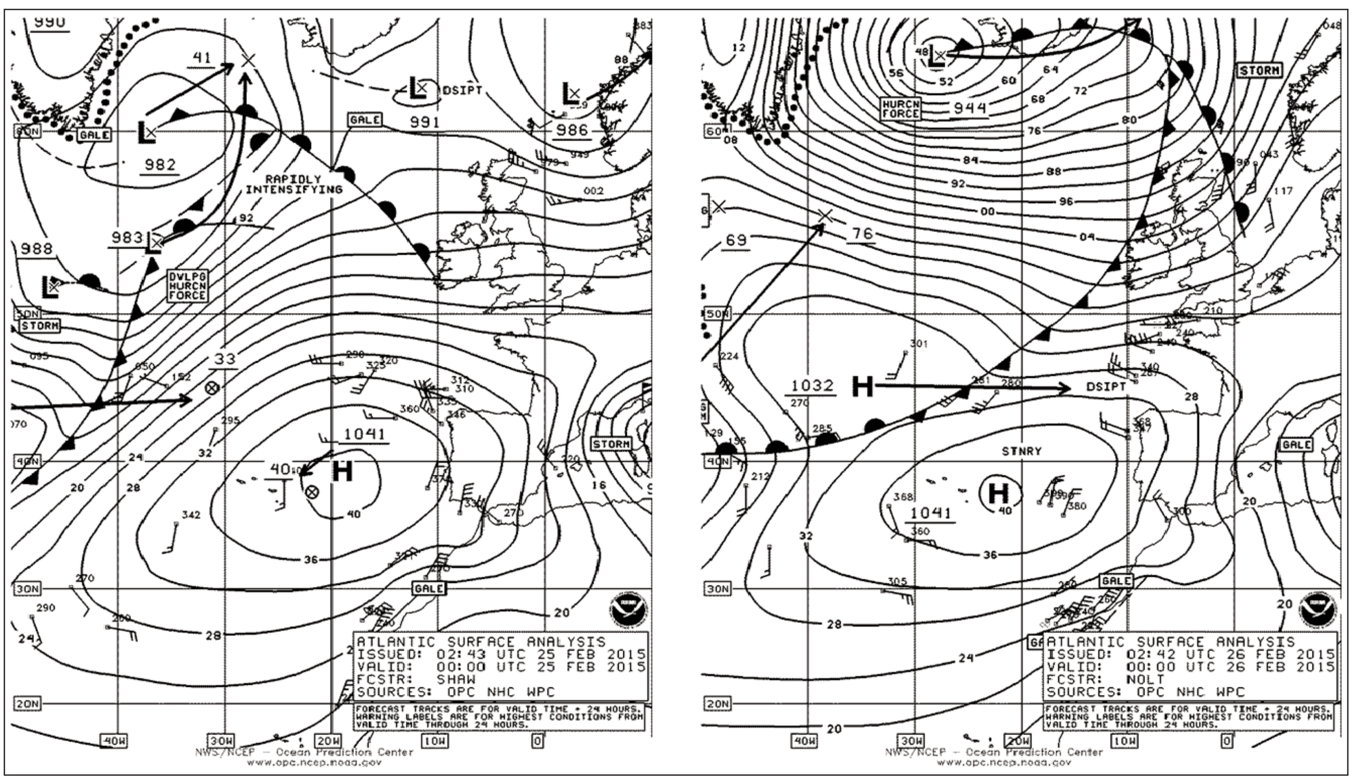


**Figure 41. OPC North Atlantic Surface Analysis charts (Part 1) valid 0000 UTC February 25 and 26, 2015.**

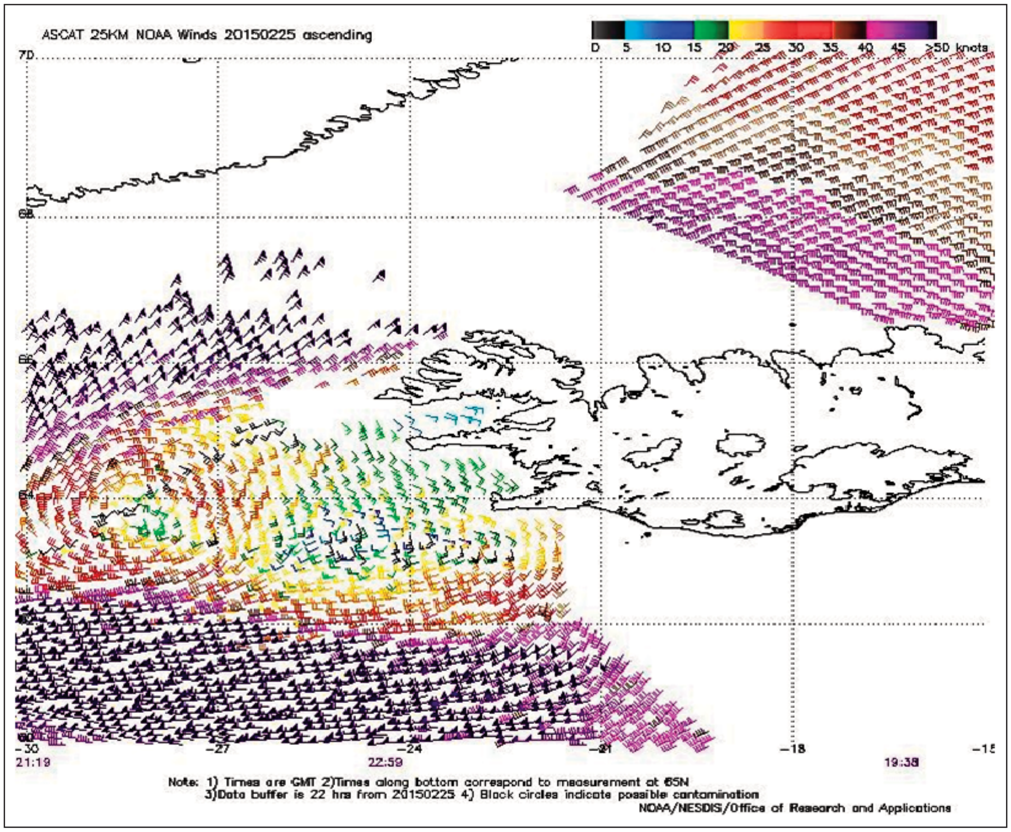


**Figure 42. ASCAT (METOP-A) image of satellite-sensed winds with 25-km resolution around the intense cyclone near Iceland shown in the second part of Figure 41. Portions of three passes are shown, with two of the passes (2119 and 2259 UTC February 25, 2015) containing the strongest winds. The valid time of the later pass is one hour prior to the valid time of the second part Figure 41. Image is courtesy of NOAA/NESDIS/ Center for Satellite Applications and Research.**

# Marine Weather Review – North Pacific Area

## September 2014 to February 2015

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*NOAA National Center for Environmental Prediction*

### Introduction

The weather pattern over the North Pacific was more active during the early fall months of September and October than during the same period a year ago as a series of cyclones moved northeast or east out of the western Pacific near Japan to the Bering Sea or just south the Aleutian Islands to the Gulf of Alaska, with three each in September and October developing hurricane force winds. Some of these included former western North Pacific tropical cyclones. Other developing lows moved out of the central or eastern North Pacific toward the Gulf of Alaska. Cyclones continued to develop mainly on a southwest to northeast track during November and December with increasing energy, with some originating in the eastern Pacific and a few turning north toward the western Bering Sea or even going west of the Kamchatka Peninsula, where they weakened. One of these, former Super Typhoon Nuri, became the most intense extratropical cyclone ever detected on the North Pacific in early November. December was the most active month with nine systems developing hurricane force winds. Activity decreased in January 2015 which produced seven hurricane force systems, and then fell off sharply in February when no cyclones with that intensity developed. A study done a decade ago based on QuikSCAT winds found that December has the highest number of hurricane force events (VonAhn and Sienkiewicz, April 2005).

Tropical activity in North Pacific including cyclones appearing on OPC oceanic surface analyses was concentrated from September to early November, with Two (2) tropical storms, Three (3) super typhoons and one hurricane occurring. The hurricane in late October, Ana, originated in the central Pacific and moved north of 30N into OPC's high seas area, an unusual occurrence. One tropical cyclone, Higos, made a brief appearance on OPC's North Pacific radiofacsimile charts in early February.

### Tropical Activity

Tropical Storm Fengshen: Fengshen tracked northeast to the south of Japan as a strengthening tropical storm on September 7 and on the following night. The cyclone passed near 28N 133E at 1200 UTC on the 7th with sustained winds of 45 kts. The **LAMBERT MARU** (7JMK) near 27N 132E reported west winds of 45 kts and 8.5 m seas (28 ft) at that time. Six hours later the **NORTHWEST SEAEAGLE** (ZCAS2) encountered northwest winds 50 kts near 28N 134E. **Figure 1** shows Fengshen at maximum strength as a tropical storm, transitioning into a post tropical storm force low. The ASCAT image in **Figure 2** returned winds to 50 kts and even some 55 kts west of the center. With low bias of the imagery at higher wind speeds, actual winds likely approached hurricane force. After initially weakening to a gale while moving out over the central North Pacific over the following two days, Fengshen re-intensified into a storm while turning north into the Bering Sea on the 12th. It developed a lowest central pressure of 961 hPa near 56N 172W at 0600 UTC on the 13th. Six hours later the buoy 46072 (51.7N 172.2W) reported west winds 35 kts with gusts to 45 kts and 5.5 m seas (18 ft), and highest significant wave heights of 7.5 m (25 ft) seven hours later. Buoy 46073 (55.0N 172.0W) reported similar conditions at 0400 UTC on the 13th, and a peak gust of 49 kts one hour later.

#### Tropical Storm Kammuri:

Kammuri originated in the deep tropics from a non tropical low near 10N 158E early on September 20 and moved northwest, becoming a tropical storm near 21N 150E four days

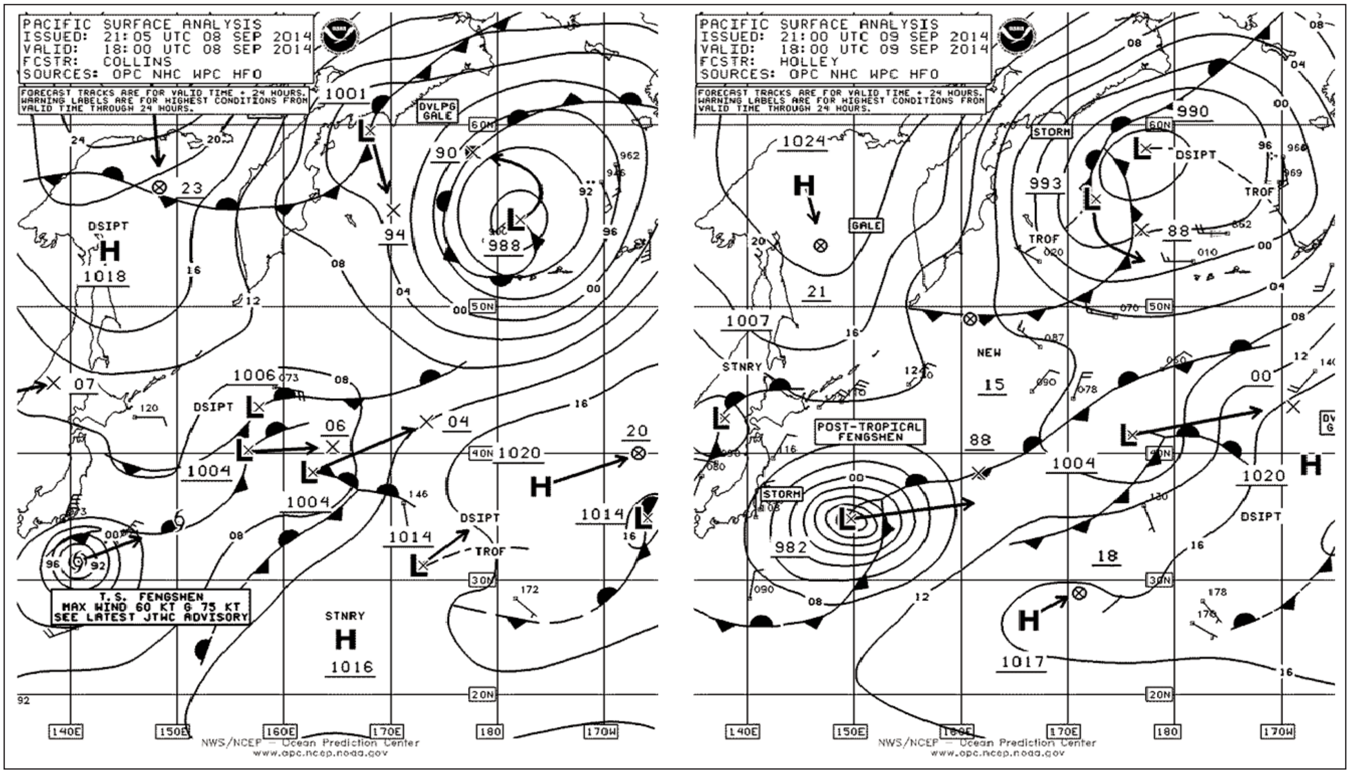


**Figure 1. OPC North Pacific Surface Analysis charts (Part 2 - west) valid 1800 UTC September 8 and 9, 2014. Twenty-four hour forecast tracks are shown with the forecast central pressures given as the last two whole digits in millibars (hPa), with the exception of tropical cyclones, for which just a tropical symbol is given at the twenty-four hour position (if still a tropical cyclone). Tropical cyclone information appears in text boxes.**

later and developing a maximum intensity of 55 kts for sustained winds while passing near 24N 145E at 1800 UTC on the 26th. The cyclone moved north and began to weaken the following day and became a minimal tropical storm on the 28th before becoming a post tropical storm force low east of Japan near 35N 149E at 0600 UTC on the 29th. Kammuri then moved northeast and weakened to a gale a day later before turning southeast October 1 and dissipating out over the North Pacific two days later.

**Super-Typhoon Phanfone:**

A developing tropical cyclone near 10N 155E at 1200 UTC September 28 and moved west northwest, becoming a tropical storm near 12N 152E 12 hours later and Typhoon Phanfone near 17N 144E 0000 UTC October 1 with sustained winds of 65 kts. Phanfone continued to intensify for the next three days and briefly became a low end super typhoon with sustained winds of 130 kts while passing near 26N 133E at 0000 UTC October 4.  The cyclone began to recurve northeast into the westerlies on the 4th and weaken while approaching Japan. **HYUNDAI REPUBLIC** (H3ZA) near 31N 128E reported north winds of 46 kts and 9.8 m seas (32 ft) at 0600 UTC on the 5th. At 0600 UTC on the 6th the **HATSU ETHIC** (VQFS4) near 39N 142E encountered north winds of 55 kts and 4.9 m seas (16 ft). **Figure 3** shows Phanfone undergoing extratropical transition as it merges with a front front and subsequent re-intensification into an intense 948 hPa hurricane force low over the central North Pacific 60 hours later. **Figure 4** is an infrared satellite image of Tropical Storm Phanfone six hours before being declared post tropical by Joint Typhoon Warning Center. It shows what looks like a partial eyewall of central dense overcast becoming embedded in frontal clouds. The ASCAT image in **Figure 5** shows scatterometer winds around the post tropical cyclone as it was approaching maximum intensity, with highest winds 50 to 55 kts on the south side. The image might miss higher winds in the data free gap between passes. The cyclone maintained hurricane force winds from 1800 UTC on the 7th through 0000 UTC on the 9th. After that the cyclone weakened with its top winds lowering to gale force in the Gulf of Alaska by the 10th. Dissipation followed late on the 11th in the northern Gulf of Alaska.

**Super-Typhoon Vongfong:**

Tropical Storm 19W formed near 7N 162E at 0600 UTC October 3 and moved northwest, becoming Typhoon Vongfong late on the 4th and passing near 16N 143E with sustained winds of 80 kts at 0000 UTC on the 6th (**Figure 3**). Rapid intensification followed, with Vongfong becoming a super typhoon early on the 7th with maximum sustained winds of 130 kts, near 17N 135E, and peaked in intensity six hours later with sustained winds of 150 kts. A weakening trend set in early on the 8th as the center of Vongfong passed west of 130E, the western

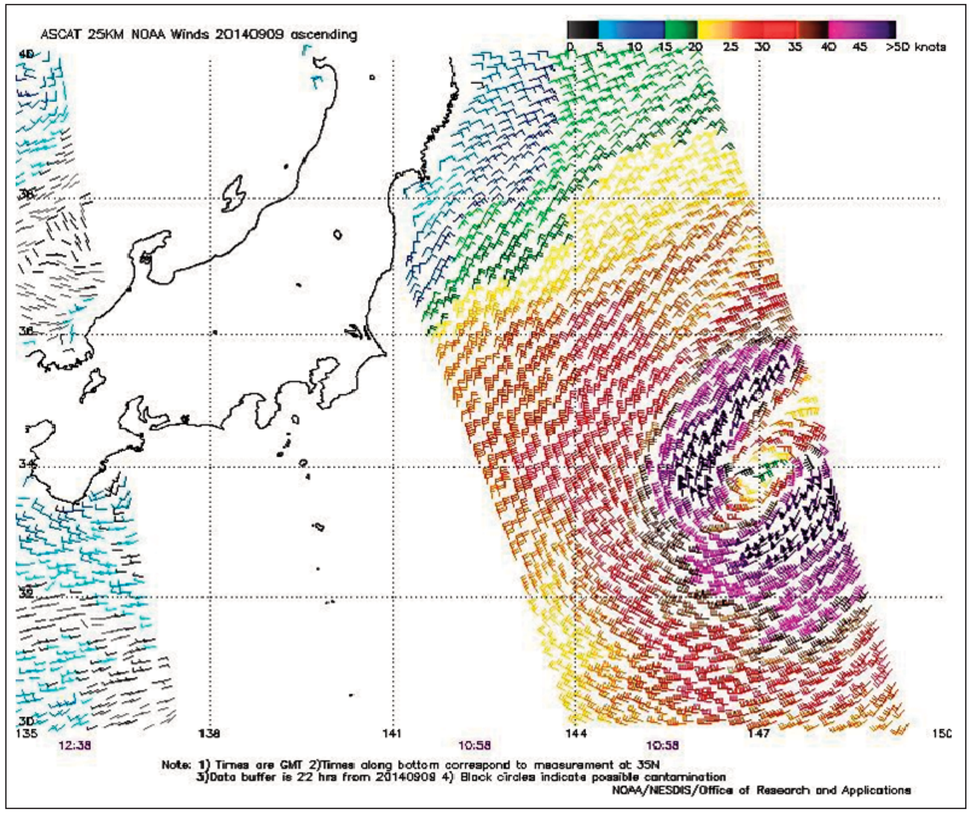


**Figure 2. ASCAT METOP-A (Advanced Scatterometer) image of satellite-sensed winds (25-km resolution) around Post-Tropical Fengshen shown in the second part of Figure 1. The valid time of the pass is 2318 UTC September 9, 2014, or about figve hours later than the valid time of the second part of Figure 1. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research.**

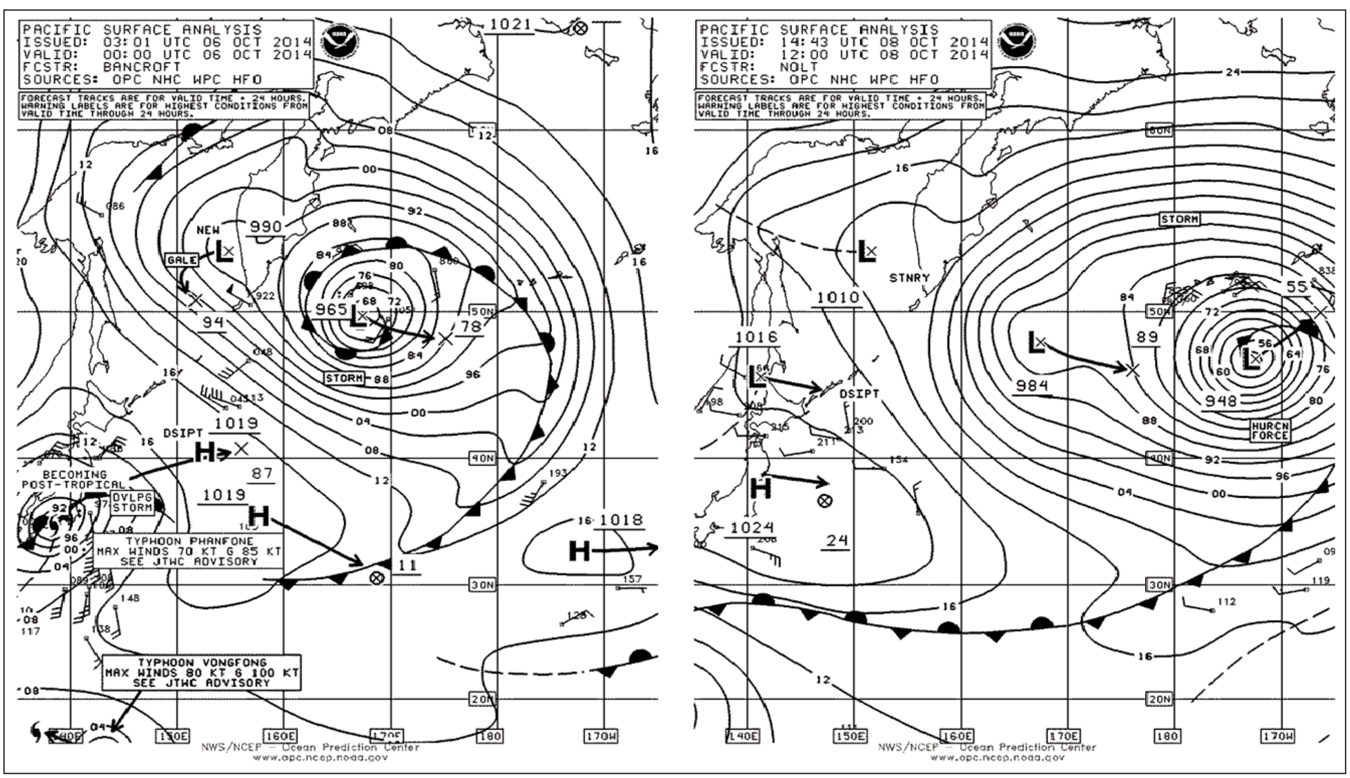


**Figure 3. OPC North Pacific Surface Analysis charts (Part 2) valid 0000 UTC October 6 and 1200 UTC October 8, 2014.**

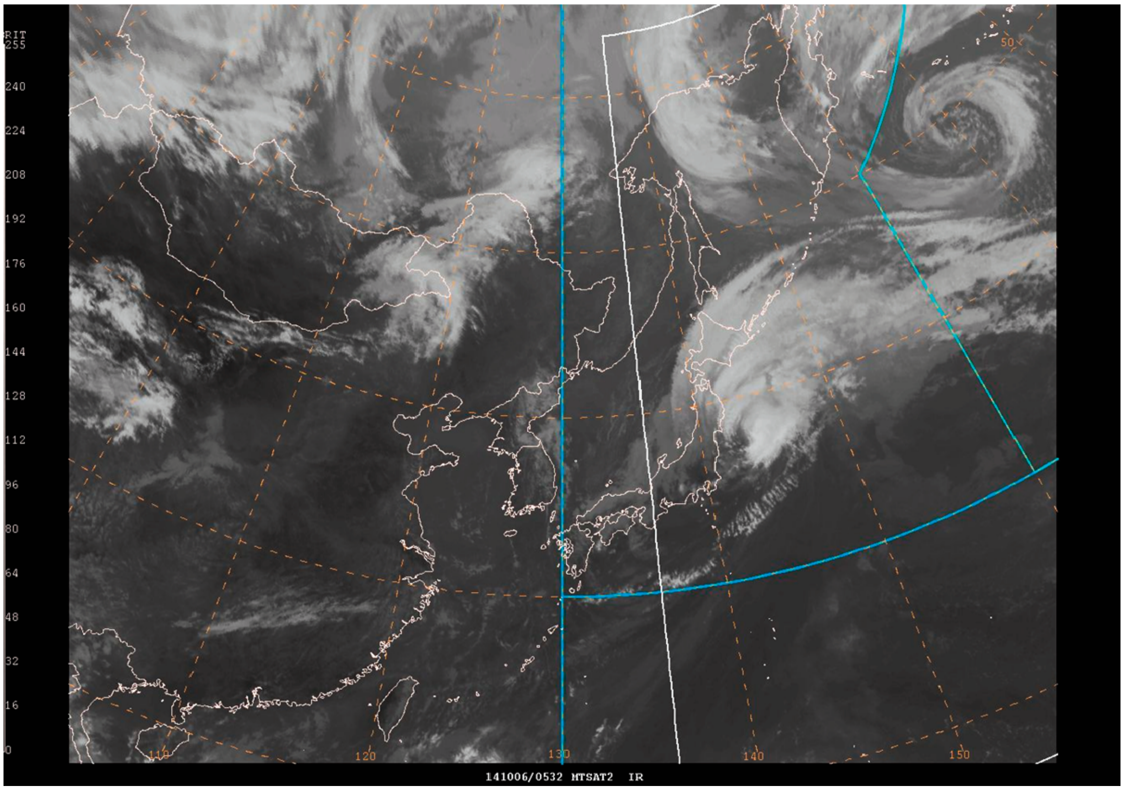


**Figure 4. MTSAT2 infrared satellite image valid 0532 UTC October 6, 2014 or about five and one-half hours later than the valid time of the first part of Figure 3. Satellite senses temperature on a scale from warm (black) to cold (white) in this type of image.**

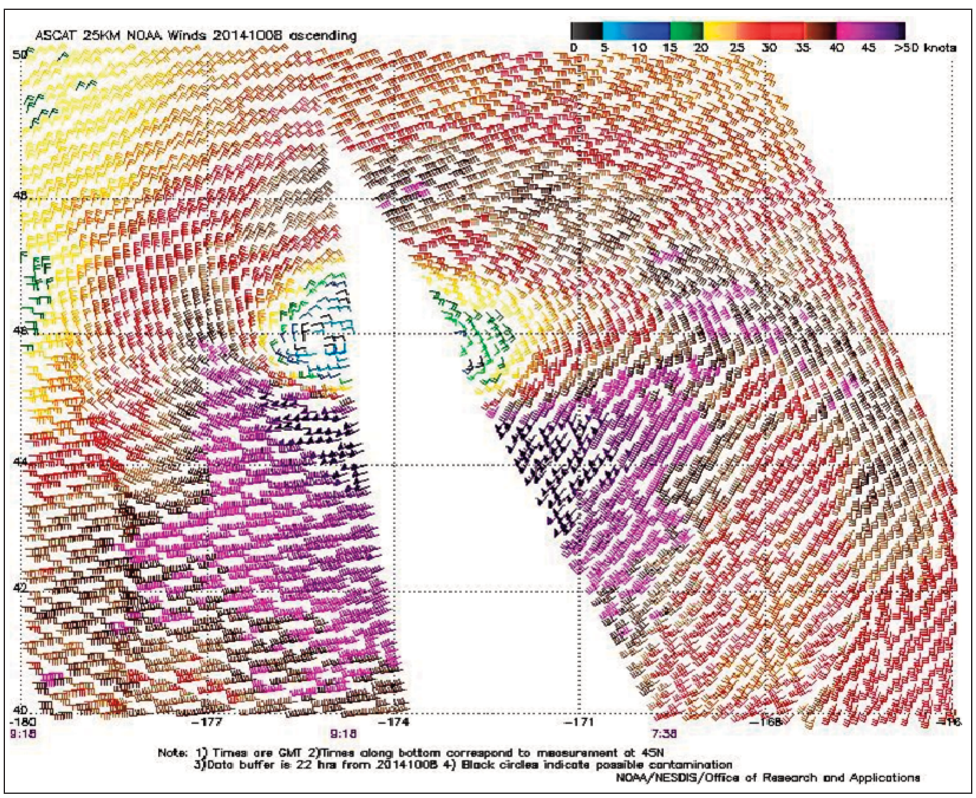


**Figure 5. ASCAT (METOP-A) image of satellite-sensed winds (25-km resolution) around the hurricane-force cyclone (Post-Tropical Phanfone) shown in the second part of Figure 3. The valid time of the eastern pass is 0738 UTC October 8, and of the western pass 0918 UTC October 8, 2014. The valid time of the later pass is about three hours prior to the valid time of the second part of Figure 3. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research.**

boundary of the Unified Surface Analysis (www.opc.ncep.noaa.gov). Vongfong returned as a northeastward moving weakening tropical storm late on the 12th and early on the 13th (**Figure 6**) and became post tropical east of Japan late on the 13th. The **PUTERI ZAMRUD** (9MCD3) near 32N 135E reported northeast winds of 68 kts at 1800 UTC on the 11th. The second part of **Figure 6** shows Vongfong at maximum strength as a post tropical storm force low. A scatterometer pass from 1036 UTC on the 14th revealed winds to 55 kts on the south and west sides, similar to **Figure 2**. The cyclone then moved northeast and gradually weakened, with its top winds lowering to gale force south of the eastern Aleutian Islands late on the 16th, and dissipated near the southern Alaska coast by the 20th.

**Hurricane Ana:**

Tropical systems originating in the eastern or central tropical Pacific do not normally move northward and cross 30N into OPC's high seas area. Ana, a minimal tropical storm west of Hawaii early on October 22, moved northward and re-intensified into a low end category 1 hurricane with sustained winds of 65 kts while passing north of 30N by early on the 25th (**Figure 7**). Tropical Cyclone Julio performed a similar feat the previous August. Ana then tracked northeastward as a weakening tropical system in the warm sector of a gale passing to the north as depicted in **Figure 7**. Ana became a post tropical storm force low near 42N 148W early on the 26th and developed a central pressure down to 984 hPa near 49N 140W the next day, before weakening near Southeast Alaska on the 28th.

**Super-Typhoon Nuri:**

Nuri was the most significant event of the period in the North Pacific, both as a tropical cyclone and as an intense extratropical low. Originating well south of Japan near 12N 140E 1200 UTC October 30, the developing tropical cyclone became Tropical Storm Nuri 24 hours later and then moved northwest while rapidly intensifying. Nuri became a typhoon near 15N 133E at 1800 UTC November 1 and a super typhoon 18 hours later while turning northward. The peak intensity of 155 kts for sustained winds with gusts to 190 kts came as the center passed near 18N 132E at 1800 UTC on the 2nd. Nuri then turned northeastward and began to weaken the next day, weakening to a tropical storm south of Tokyo near 29N at 0000 UTC on the 6th. At 1800 UTC on the 6th Nuri was a strong tropical storm before becoming a post tropical hurricane force low six hours later. **Figure 8** depicts the rapid re-intensification into an intense extratropical low over a thirty six hour period. The central pressure fell 57 hPa in a 24 hour period ending at 0000 UTC on the 8th more than twice the rate needed for the cyclone to be considered a "bomb" (Sanders and Gyakum, 1980). The 924 hPa central pressure was likely a record for the North Pacific, with the previous record 925 hPa at Dutch Harbor, AK in a late October storm in 1977 (Reference 7). **Figure 9** is an infrared satellite image of the post tropical cyclone near peak intensity, showing a fully occluded and mature system with broad cold topped frontal bands wrapping around a well defined center. The ASCAT image in **Figure 10** returned winds 50 to 65 kts both north and south of the center with the highest 70 kts appearing north of an occluded front. Also at the surface, a drifting buoy at 55.08N 170.71E (21574) reported a lowest pressure of 929 hPa at 0210 UTC on the 8th. Shemya, Alaska in the western Aleutians reported a southeast wind of 63 kts with gusts to 80 kts at 1929 UTC on the 7th and a peak gust of 84 kts at 1856 UTC on the 7th, followed by a lowest pressure of 946 hPa at 1956 UTC on the 8th. **WELLINGTON STAR** (C6TJ9) near 53N 172E reported southeast winds of 55 kts and 8.2 m seas (27 ft) at 1900 UTC on the 7th. Buoy 46035 (57.0N 177.7W) reported at 0600 UTC on the 8th a southeast wind of 40 kts with gusts 45 kts and 4.0 m seas (13 ft), and seas of 8.8 m (29 ft) 20 hours later. Buoy 46072 (51.7N 172.2W) reported highest seas of 9.5 m (31 ft) at 0100 UTC on the 9th. The cyclone subsequently moved east and weakened with its top winds lowering to storm force late on the 8th and to gale force the next day as it stalled over the central Bering Sea. The system dissipated near the central Aleutians on the 13th.

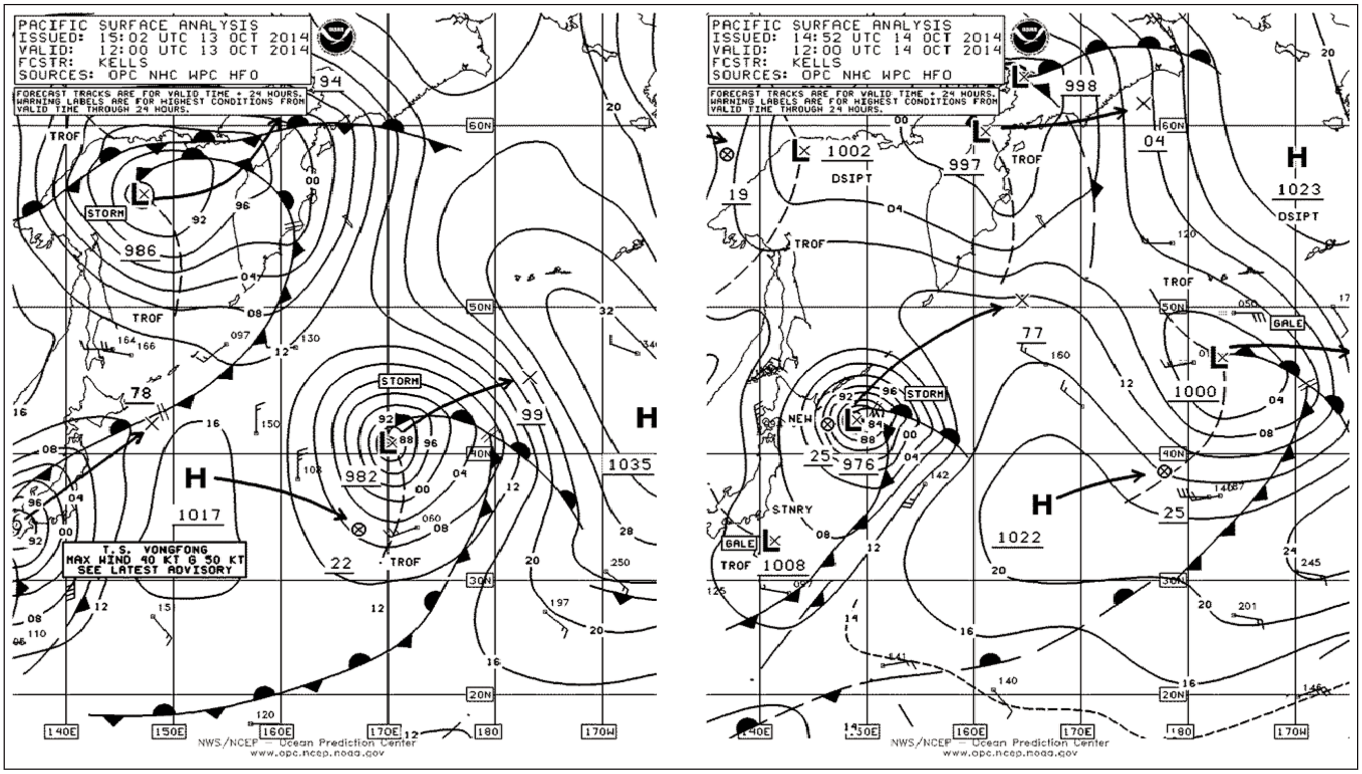


**Figure 6. OPC North Pacific Surface Analysis charts (Part 2) valid 1200 UTC October 13 and 14, 2014.**

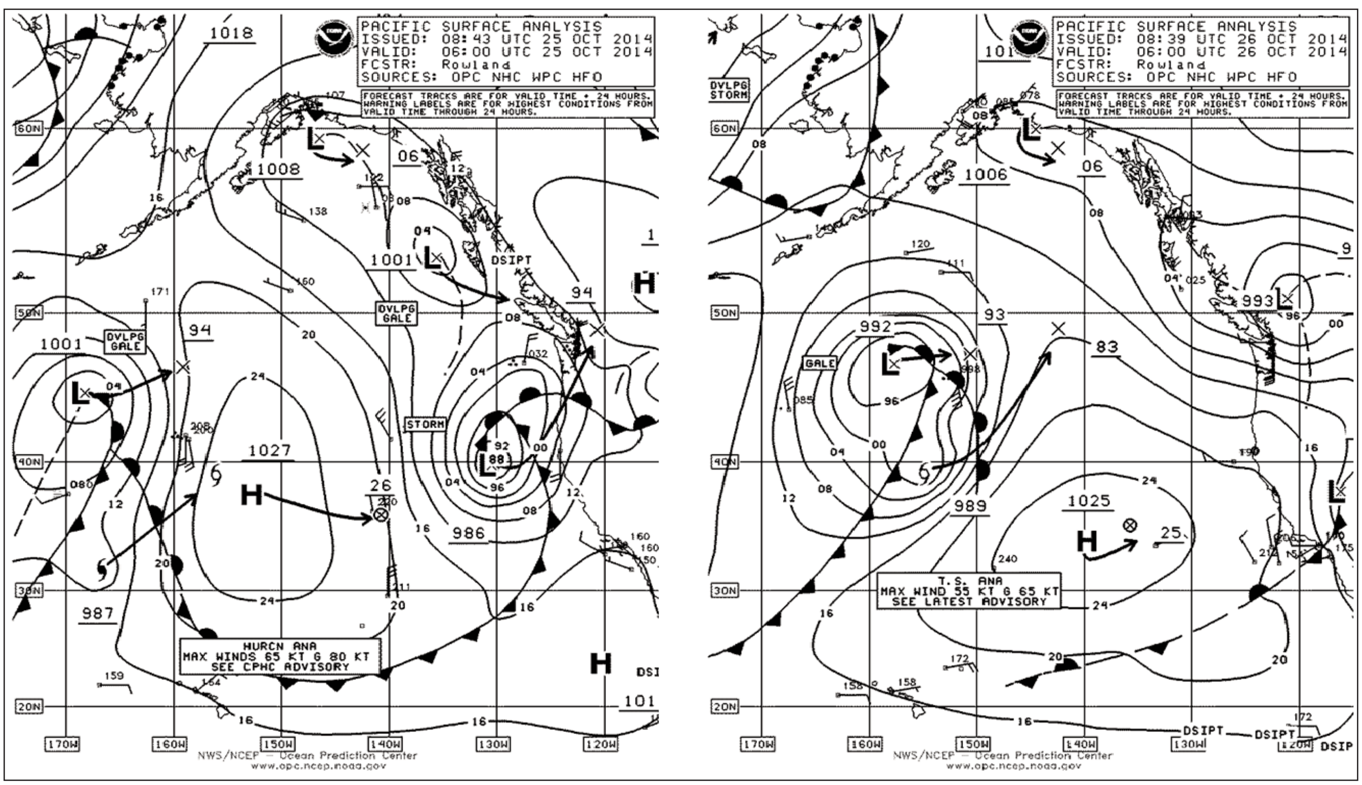


**Figure 7. OPC North Pacific Surface Analysis charts (Part 1 - east) valid 0600 UTC October 25 and 26, 2014.**

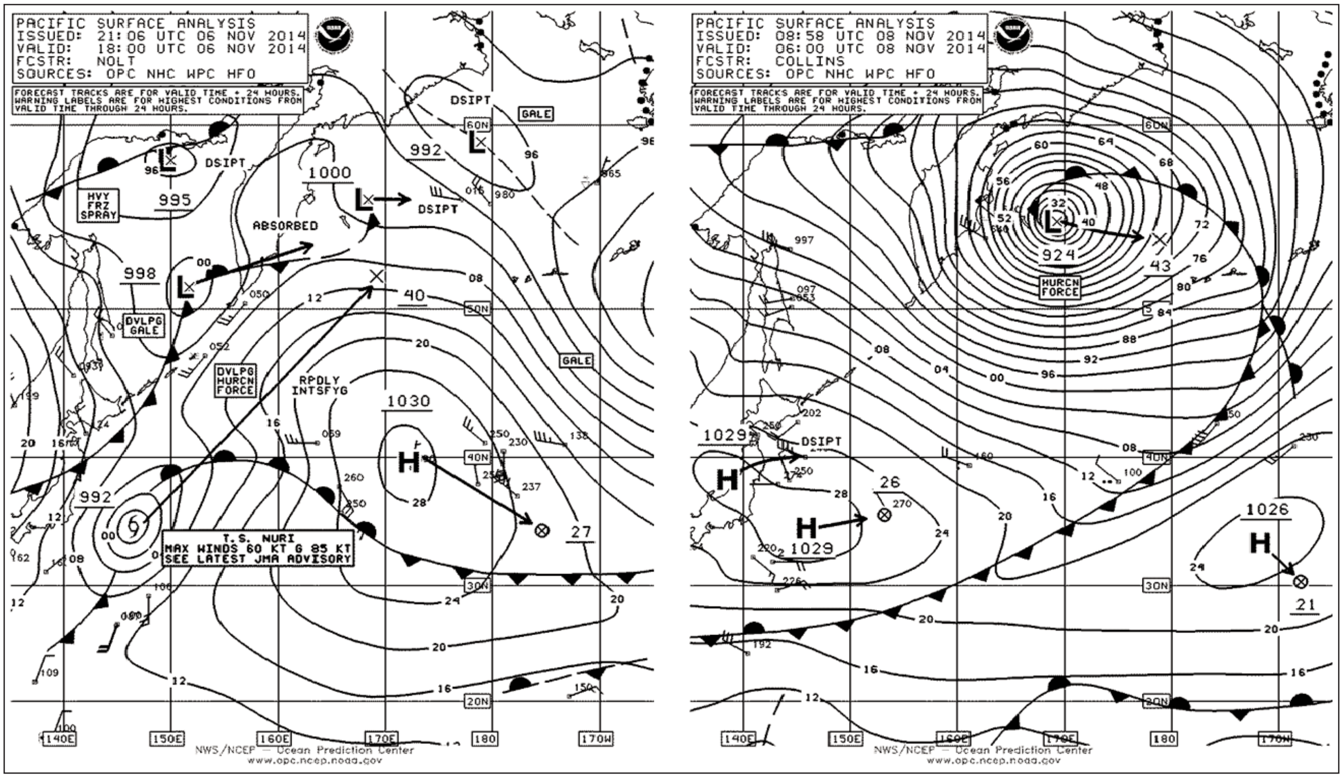


**Figure 8. OPC North Pacific Surface Analysis charts (Part 2) valid 1800 UTC November 6 and 0600 UTC November 8, 2014.**

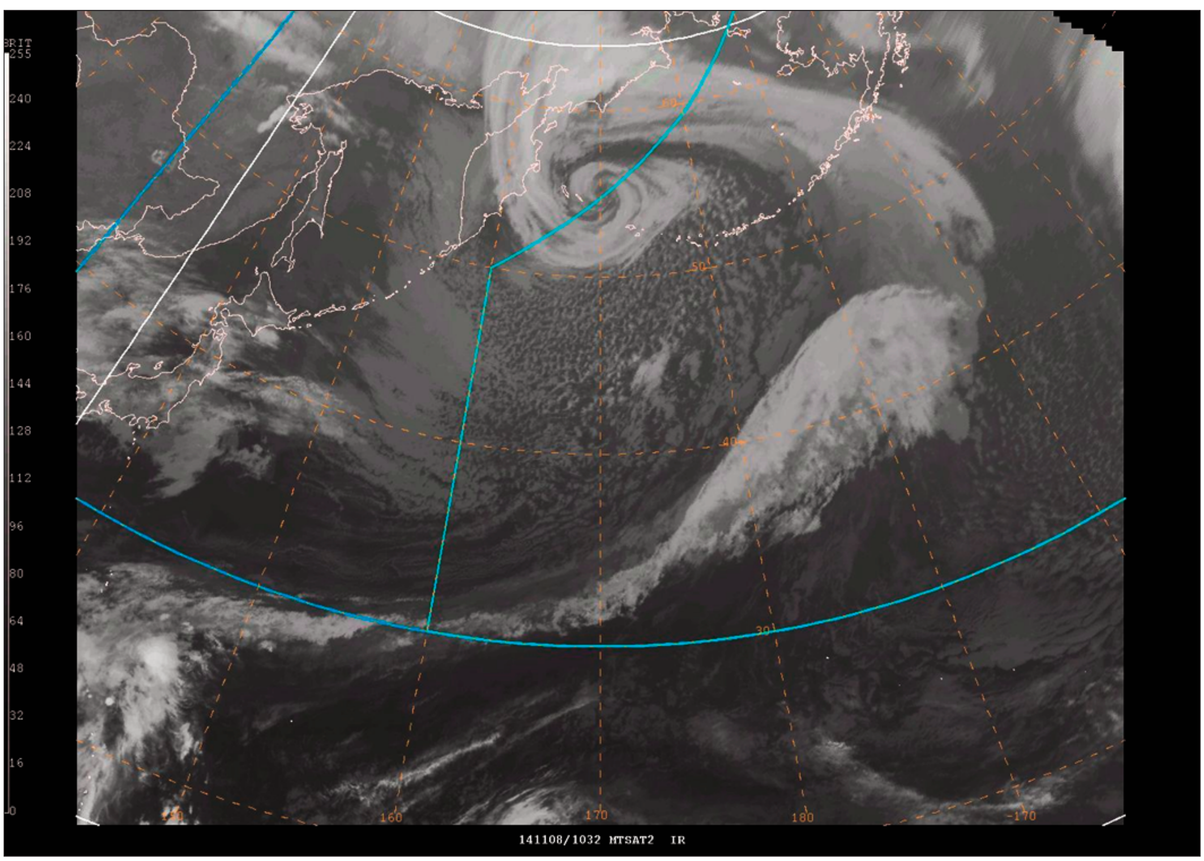


**Figure 9. MTSAT2 infrared satellite image valid 1032 UTC November 8, 2014 or about four and one-half hours later than the valid time of the second part of Figure 8. Satellite senses temperature on a scale from warm (black) to cold (white) in this type of image.**

**Typhoon Higos:**

Higos drifted northwest into OPC's North Pacific radiofacsimile chart area near 154E on the morning of February 10 as a weakening typhoon with maximum sustained winds of 85 kts. 12 hours later Higos was a tropical storm near 17N 153E with sustained winds of 50 kts. The cyclone then weakened to a tropical depression at 1200 UTC on the 11th before accelerating north and becoming a dissipating remnant low near 20N 154E at 1800 UTC on the 12th.

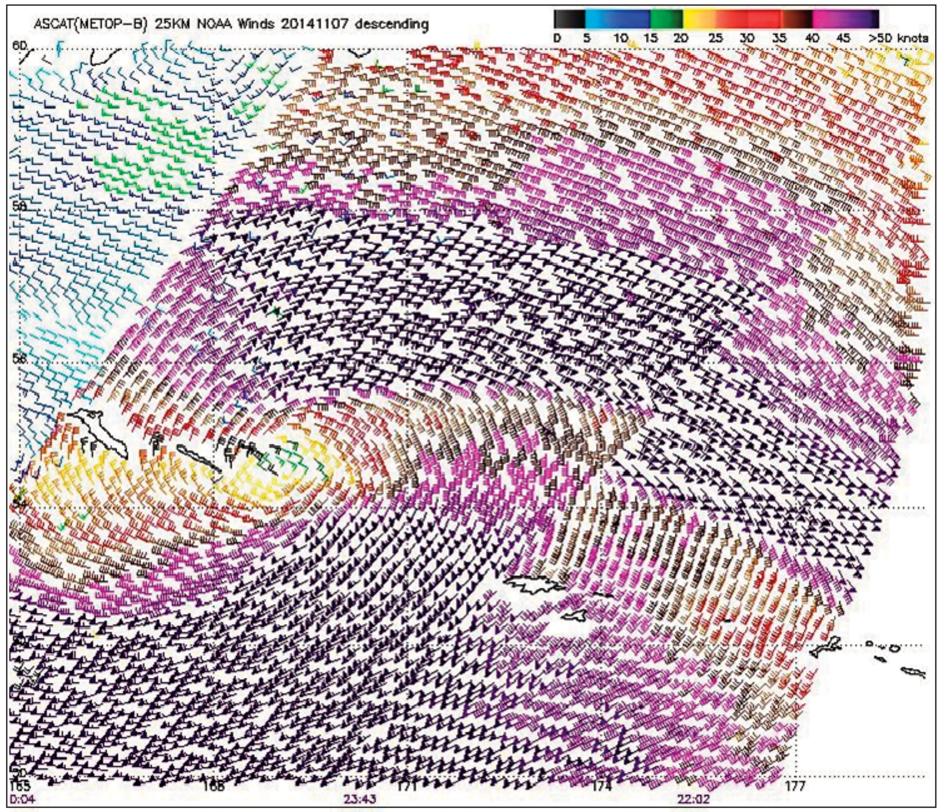


**Figure 10. 25-km ASCAT (METOP-B) image of satellite-sensed winds around the hurricane-force low (Post-Tropical Nuri) shown in the second part of Figure 8. Portions of two passes are shown, with valid times of 2202 UTC and 2343 UTC November 7, 2014. The valid time of the later pass is about six and one-quarter hours prior to the valid time of the second part of Figure 8. The western Aleutian Islands appear in the image. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research.**

## Other Significant Events of the Period

**Western North Pacific Storm, September 4-5:**

An early season storm force low developed in the western waters early in September. A frontal wave of low pressure moved east northeast from Japan on the 1st and developed a lowest central pressure of 974 hPa with storm force winds near 44N 176E at 1800 UTC on the 5th. An ASCAT (METOP-A) pass from 2257 UTC on the 5th revealed a small area of winds to 50 kts on the south side of the center. The cyclone turned northward toward the Bering Sea on the 6th when its winds weakened to gale force. The **COSCO HARMONY** (VRJA4) near 49N 175E reported northeast winds of 45 kts and 5.8 m seas (19 ft) at 0600 UTC on the 6th. The **MSC TEXAS** (DCSY2) near 48N 172W encountered southeast winds of 45 kts at 2100 UTC on the 6th. The cyclone stalled in the southern Bering Sea with winds below gale force on the 8th.

**Northwest Pacific Storm, September 18-20:**

Originating south of Japan early on the 17th, this cyclone developed into the first hurricane force low of the season as depicted in **Figure 11**. The central pressure fell 32 hPa in the 24 hour period ending at 1200 UTC on the 19th. The second part of **Figure 11** shows the cyclone at maximum intensity. An ASCAT (METOP-A) pass from 1053 UTC on the 19th revealed winds to 50 kts southeast of the center of a compact circulation. **BUDAPEST EXPRESS** (DGWE2) reported south winds of 45 kts near 42N 162E at 2100 UTC on the 18th. The **EVER SAFETY** (3EMQ4) encountered west winds of 35 kts and 9.0 m seas (30 ft) near 46N 162E at 0600 UTC on the 20th. The system subsequently weakened as it moved into the western Bering Sea, where it stalled and dissipated on the 23rd.

**Eastern North Pacific Storm, September 21-24:**

**Figure 12** depicts the development of this hurricane force low. It originated in the central waters well south of the central Aleutians early on the

20th. The second part of **Figure 12** shows the cyclone near maximum intensity. The ASCAT image in **Figure 13** shows a swath of 50 kts winds on the south and west sides.

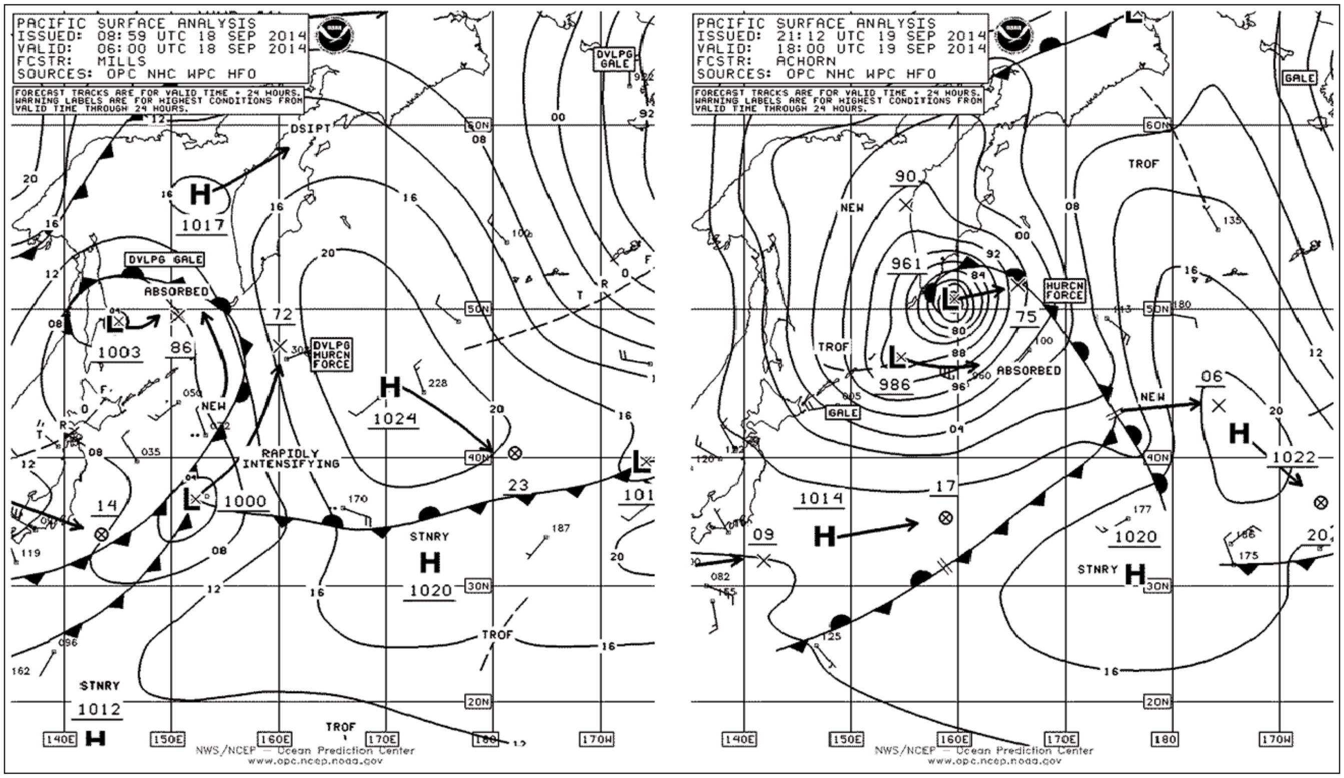


**Figure 11. OPC North Pacific Surface Analysis charts (Part 2) valid 0600 UTC September 18 and 1800 UTC September 19, 2014.**

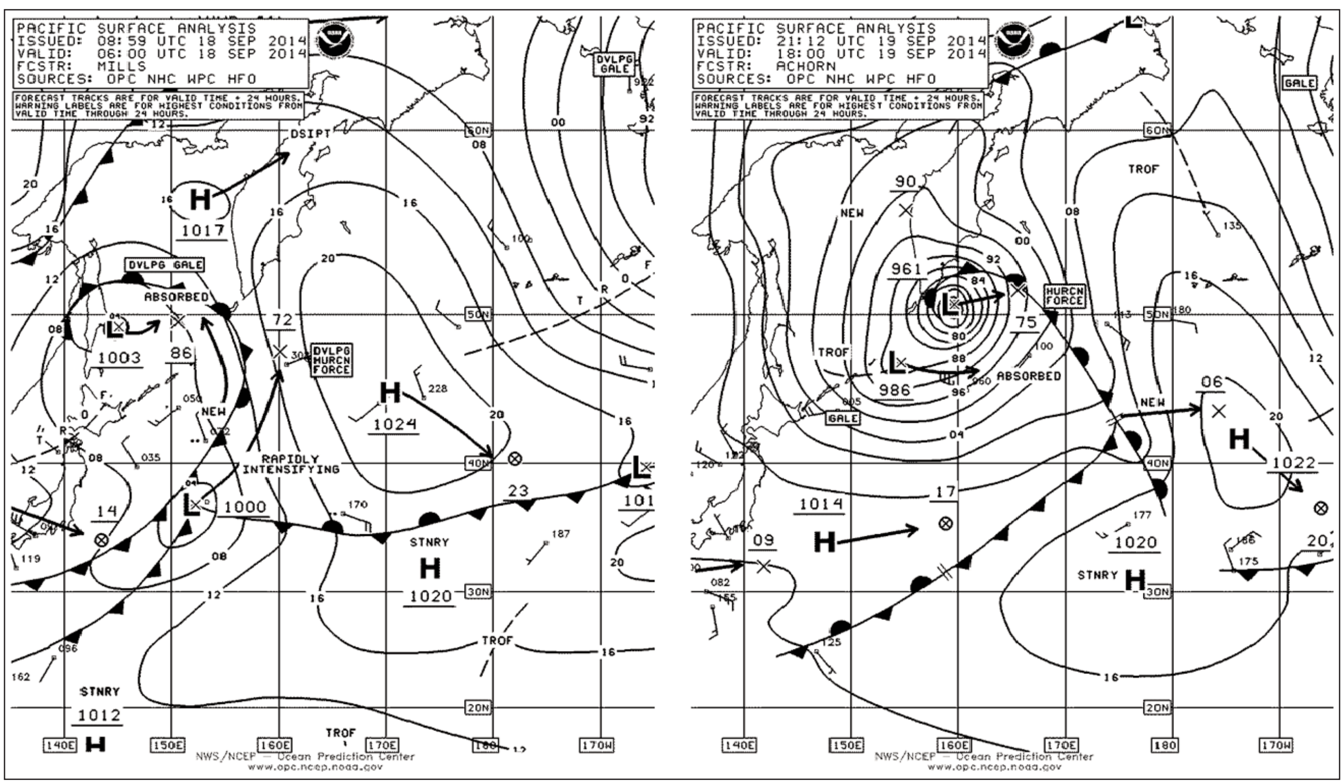


**Figure 12. OPC North Pacific Surface Analysis charts (Part 1) valid 0600 UTC September 22 and 1800 UTC September 23, 2014.**

**Northwest Pacific Storm, September 25-27:**

A developing low moved northeast across Japan on September 24 and developed storm force winds near the northern Kurile Islands early on the 26th and a lowest central pressure 976 hPa with hurricane force winds near 49N 162E at 0000 UTC on the 27th. The **SANTA FIORENZA** (A8AJ4, 48N 156E) reported north winds of 50 kts at 2200 UTC on the 26th. Two hours later the **HANOVER EXPRESS** (DFGX2) encountered north winds of 45 kts and 9.0 m seas (30 ft). An ASCAT METOP-B image from 2315 UTC on the 26th showed northwest winds of 50 kts at the edge of a pass and it is possible it missed higher winds. The cyclone subsequently moved east from the 27th through the 30th as a gale and then turned northeast and moved into Southeast Alaska late on October 3rd.

**Western North Pacific Storm, October 11-13:**

Low pressure formed well southeast of Japan near 27N 158E at 0600 UTC October 11th and moved northeast while intensifying over the next 36 hours, briefly developing hurricane force winds on the 12th. The central pressure fell 29 hPa in the 24 hour period ending at 1800 UTC on the 12th, when the cyclone was at 37N 171E with a 973 hPa central pressure. **Figure 6** shows the cyclone eighteen hours later and beginning to weaken while moving northeast. The cyclone weakened to a sub gale force low near Southeast Alaska late on the 17th.

**North Pacific and Bering Storm, October 29 - November 1:**

A wave of low pressure moved out of the western waters and toward the Bering Sea while rapidly intensifying as depicted in **Figure 14**. The central pressure fell 39 hPa during this 24 hour period. The cyclone briefly developed hurricane force winds late on the 30th, with the lowest central pressure of 963 hPa occurring early on the 31st near 56N 172W. An ASCAT (METOP-B) pass from 2130 UTC on the 30th returned 50-55 kts winds on the south side, similar to **Figure 16** for a mid November event.
The **APL CHINA** (WDB3161) near 53N 158W reported west winds of 50 kts and 9.4 m seas (31 ft) at 0000 UTC November 1st. Buoy 46072 (51.7N 172.2W) reported west winds of 40 kts with gusts to 52 kts and 8.2 m seas (27 ft) at 0600 UTC on the 31st, and a report of 10.4 m seas (34 ft) one hour later. The cyclone then turned eastward and weakened to a gale on November 1st, and dissipated in the Gulf of Alaska on November 4th.

**North Pacific Storm, November 18-20:**

Mid November was the start of a more active period lasting through December. **Figure 15** shows a frontal wave of low pressure moving out of the western waters and rapidly developing. The central pressure fell 38 hPa in the 24 hour period ending at 0000 UTC on the 20th. The central pressure reached 949 hPa six hours later. The ASCAT image in **Figure 16** shows strong support for hurricane force winds with winds of 50 to 60 kts appearing south of the center with limited coverage. The ship **VRIZ9** (35N 169W) reported south winds of 40 kts and 8.5 m seas (28 ft) at 0000 UTC on the 20th. Buoy 46066 (52,8N 155.0W) reported southwest winds 37 kts with gusts to 47 kts and a peak gust of 51 kts at 2300 UTC on the 20th, and a report of 9.0 m seas (30 ft) one hour later. The cyclone subsequently moved north and then turned west and stalled and weakened near the Alaska Peninsula late on the 21st and on the 22nd.

**North Pacific Storms, November 23-26:**

Three strong lows developed during this period, all briefly developing hurricane force winds and central pressures around 980 hPa either on or late on November 25th. **Figure 17** and **Figure 18** shows the development of an eastern Pacific system; another near 180W and a third moving off Japan. The eastern low, originating near 32N 157W late on the 23rd, developed a lowest central pressure of 979 hPa near 40N 148W at 0000 UTC on the 26th. The Rapidscat imagery in Figure 19 shows a swath of 45 to 55 kts winds south and west of the center and some higher winds to 75 kts near 40N which are rain flagged. Rapidscat is a QuikSCAT type instrument aboard the International Space Station offering better coverage than ASCAT except at high latitudes. The cyclone weakened to a gale on the 26th and continued to weaken as it drifted northeast and then southeast toward the end of the month. The **APL THAILAND** (WCX8882) near 38N 134W reported south winds of 45 kts and 7.0 m seas (23 ft) at 0000 UTC on the 26th. The central Pacific system originated near 29N 149E at 0000 UTC on the 23rd and developed a lowest central pressure of 980 hPa and hurricane force winds near 45N 175W at 1200 UTC on the 25th. An ASCAT (METOP-A) image from 0926 UTC on the 25th revealed northwest winds 50 to 60 kts near the edge of a pass. The **LIBERTY PRIDE** (KRAU) near 41N 179E reported northwest winds of 35 kts and 9.4 m seas (31 ft) at 0600 UTC on the 25th. Buoy 46072 (51.7N 172.2W) reported southeast winds of 40 kts and 10.7 m seas (35 ft) at 0400 UTC on the 26th. The cyclone subsequently moved into the Bering Sea as a gale by the 26th and dissipated on the 29th over eastern Russia. The western cyclone developed as two weak lows near Japan merged (**Figure 17** and **Figure 18**) to form a 982 hPa center near 48N 173E with hurricane force winds at 0600 UTC on the 26th. It then weakened as it moved north through the Bering Sea from the 27th to the 29th.

**Western North Pacific Storm, November 25-30:**

A wave of low pressure passed across Japan on November 25th and quickly developed storm force winds east of Japan early on the 26th. It developed an intensity similar to that of the previous three storms as the center passed near 37N 168E with a 978 hPa central pressure at 1800 UTC on the 28th. OPC analyzed this system as having hurricane force winds from 0000 UTC to 1800 UTC on the 28th. Weakening set in as the system tracked east northeast toward the eastern Aleutians.

**North Pacific Storm, December 4-7:**

The next significant event was a stronger development originating over southern Japan late on December 3rd and moving northeast. **Figure 20** depicts the final 24 hours of development leading to a lowest central pressure of 956 hPa, the pressure fell 42 hPa in the 24 hour period ending at 1200 UTC on the 5th. **Figure 21** shows a large area of ASCAT winds of 50 to 60 kts with good support for classifying this as a hurricane force low. The **EVER DIAMOND** (3FQS8) near 35N 157E reported southwest winds of 40 kts and 8.5 m seas (28 ft). The cyclone then moved east with some weakening but maintaining storm force winds until becoming absorbed by a new development to the east on the 7th.

**North Pacific Storm, December 9-12:**

This developing hurricane force low shown in **Figure 22** tracked south of the previous system and starting from a weak low off Japan, developed hurricane force winds in only 24 hours, with the central pressure falling 33 hPa in this period, impressive for that low latitude. The Rapidscat image in **Figure 23** is similar to **Figure 19** for the eastern event except for showing more numerous winds in the 60 to 75 kts range.

The **COSCO GLORY** (VRIR7) near 38N 161W encountered south winds of 45 kts and 7.0 m seas (23 ft) at 2200 UTC on the 11th. The cyclone developed a lowest central pressure of 968 hPa near 43N 178W at 1200 UTC on the 11th. The system subsequently moved east and weakened to a gale force low late on the 12th in the eastern North Pacific, before dissipating late on the 13th.

**North Pacific Storms, December 15-18:**

Two strong cyclones developed at about the same time in mid December as depicted in **Figure 24**. The western system moved off Japan early on the 16th and is shown at maximum intensity in the second part of **Figure 26**. The central pressure fell 52 hPa in the 24 hour period ending at 0000 UTC on the 17th. This was the most rapid rate of intensification among all cyclones with non tropical origin in the North Pacific during the period. The scatterometer pass near the time of maximum intensity (**Figure 25**) reveals winds 50 to 60 kts both north and south of the storm center near the southern Kurile Islands. The cyclone subsequently drifted southeast and weakened, before dissipating late on the 17th. The hurricane force low on the eastern edge of the second part of **Figure 24** originated 39N 154E early on the 15th and tracked east northeast, developing hurricane force winds over the central waters near 43N 174W at 1800 UTC on the 16th and a deepest central pressure of 958 hPa near 47N 162W at 1200 UTC on the 17th. An ASCAT (METOP-A) pass from 2108 UTC on the 17th was similar to **Figure 21** for the December 4th-7th event except winds were higher, up to 65 kts. A weakening trend set in thereafter, as the system moved toward the Gulf of Alaska, where winds became sub-gale force late on the 19th.

**Northwest Pacific Storm. December 19-21:**

A low pressure area rapidly intensified as it moved northeast across the Sea of Japan late on the 19th and early on the 20th, developing storm force winds in the northern Sea of Japan early on the 20th and hurricane force winds later that day as it moved east of Sakhalin Island. The central pressure fell 40 hPa in the 24 hour period ending at 0600 UTC on the 21st. The cyclone developed a lowest central pressure of 954 hPa near 53N 145E at 1200 UTC on the 21st.
The **HANOVER EXPRESS** (DFGX2) near 39N 148E reported south winds of 50 kts and 5.5 m seas (18 ft) at 1800 UTC on the 20th. . The **APL THAILAND** (WCX8882) near 39N 145E encountered northwest winds of 45 kts and 7.0 m seas (23 ft) six hours later. An ASCAT (METOP-B) pass from 1125 UTC on the 21st revealed east to northeast winds 50 to 60 kts on the north side of the cyclone. The cyclone subsequently stalled and weakened, with **Figure 26** showing it as a dissipating gale in the western Sea of Okhotsk.

**Northeastern Pacific Storm, December 22-23:**

This relatively short lived event originated as a new low near 41N 147W at 0600 UTC on December 22nd which moved north and developed rapidly. The cyclone developed a lowest central pressure of 976 hPa and briefly hurricane force winds near 53N 138W at 1200 UTC on the 23rd. An ASCAT (METOP-B) pass from 0537 UTC on the 23rd revealed a swath of west winds 50 to 55 kts south of the cyclone center, near the time of maximum intensity.
The **APL PHILLIPINES** (WCX8884) near 47N 140W reported southwest winds of 50 kts and 6.0 m seas (20 ft) at 0600 UTC on the 23rd. The **MIDNIGHT SUN** (WAHG) encountered northwest winds of 45 kts and 9.4 m seas (31 ft) near 52N 137W at 1800 UTC on the 23rd. The cyclone then drifted northeast and weakened near the Queen Charlotte Islands on the 24th.

**Northwest Pacific and Bering Sea Storm, December 22-24:**

Originating over Japan late on December 20th, this developing cyclone moved northeast and rapidly intensified after the 21st, with the central pressure dropping 33 hPa in the 24 hour period ending at 1200 UTC on the 23rd (**Figure 26**). It briefly developed hurricane force winds with a lowest central pressure of 954 hPa near 55N 176E at 1800 UTC December 23rd. The second part of **Figure 26** shows this Bering Sea system six hours later, when it began to drift northwest and weaken. An ASCAT (METOP-A) pass from 2339 UTC on the 23rd showed east to northeast winds to 50 kts over the northwest Bering Sea. A vessel reporting with the **SHIP** call sign reported south winds of 45 kts and 4.9 m seas (16 ft) near 36N 180W at 0000 UTC on the 24th. The **SAGA SPRAY** (VRWW5) near 54N 171E encountered southwest winds of 40 kts and 6.7 m seas (22 ft) 12 hours later. The cyclone subsequently drifted over the western Bering Sea and dissipated over the Kamchatka Peninsula early on the 25th.

**North Pacific Storm, December 23-24:**

Low pressure formed near 43N 160E with a 992 hPa center at 0600 UTC December 24th, rapidly intensified in the following twelve hours and briefly developed hurricane force winds near 48N 171E with a 976 hPa central pressure at 0000 UTC on the 24th (**Figure 26**). The ASCAT imagery in **Figure 27** shows an area of west winds 50 to 60 kts south of the low center. Winds detected by ASCAT were actually higher with this smaller and more compact cyclone than with the larger Bering Sea system. The cyclone subsequently moved northeast into the Bering

Sea as a gale late on the 24th before dissipating over Alaska the next day.

### Northwest Pacific and Bering Sea Storm, December 29-31:

A developing low tracked northeast from Japan to the western Bering Sea at the end of December. **Figure 28** shows the main development over a thirty six hour period and includes a drop in central pressure of 44 hPa in the 24 hour period ending at 1200 UTC on the 30th. The 947 hPa central pressure made it the deepest cyclone of the period not including those with tropical origin. **Figure 29** shows a swath of winds 50 to 60 kts south of the center appearing in scatterometer imagery. The **STAR FUJI** (LAVX4) near 50N 155E reported northwest winds of 50 kts and 6.0 m seas (20 ft) at 1200 UTC on the 31st. The **PRAGUE EXPRESS** (DGZR2) near 54N 165E encountered northeast winds 40 kts and 9.0 m seas (30 ft). The cyclone subsequently moved north and weakened, before dissipating over the Kamchatka Peninsula late on the 31st.

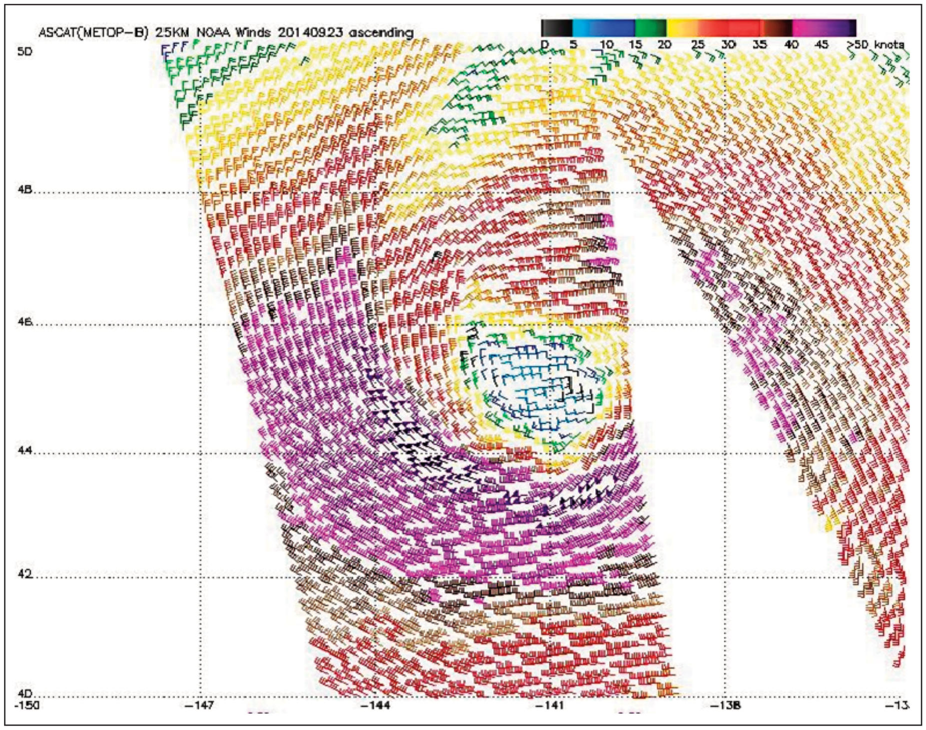


**Figure 13. ASCAT (METOP-B) image of satellite-sensed winds, 25-km resolution, around the cyclone shown in the second part of Figure 12. The valid time of the pass is 0659 UTC September 23, 2014, or about eleven hours prior to the valid time of the second part of Figure 12. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research**

### Northwest Pacific and Bering Sea Storms, December 31-January 4:

Two subsequent events at the beginning of January followed tracks similar to that of December 29-31 event except were not quite as intense. The first of these moved northeast off Japan's main island early on December 31st and rapidly deepened, becoming a hurricane force low as it passed near 45N 160E with a 962 hPa central pressure at 1800 UTC January 1st. Its central pressure had fallen 27 hPa in the preceding 24 hour period. An ASCAT (METOP-A) pass from 0958 UTC January 1st showed a partial view of winds 50 to 60 kts at the pass edge on the southeast side of the cyclone center.

The cyclone developed a lowest central pressure of 958 hPa near 56N 166E at 1800 UTC on the 2nd, but its top winds had weakened to storm force by that time. **Figure 30** shows this system in the western Bering Sea weakening and moving inland over Russia while the second low rapidly intensified east of Japan. The second low became slightly more intense, developing a lowest central pressure of 954 hPa near 47N 166E at 0600 UTC on the 4th. The period covered by **Figure 30** includes a 24 hour period ending at 1800 UTC on the 3rd when the central pressure fell 38 hPa. An ASCAT (METOP-B) pass from 2227 UTC on the 3rd returned winds as high as 65 kts south of the center, but otherwise similar to the pattern seen in **Figure 25** for the mid December event near the Kurile Islands. The cyclone then weakened on the 4th as it moved north, with its top winds lowering to gale force later that day as it passed 50N. Dissipation followed late on the 6th near the Kamchatka Peninsula. (continued Page 78)

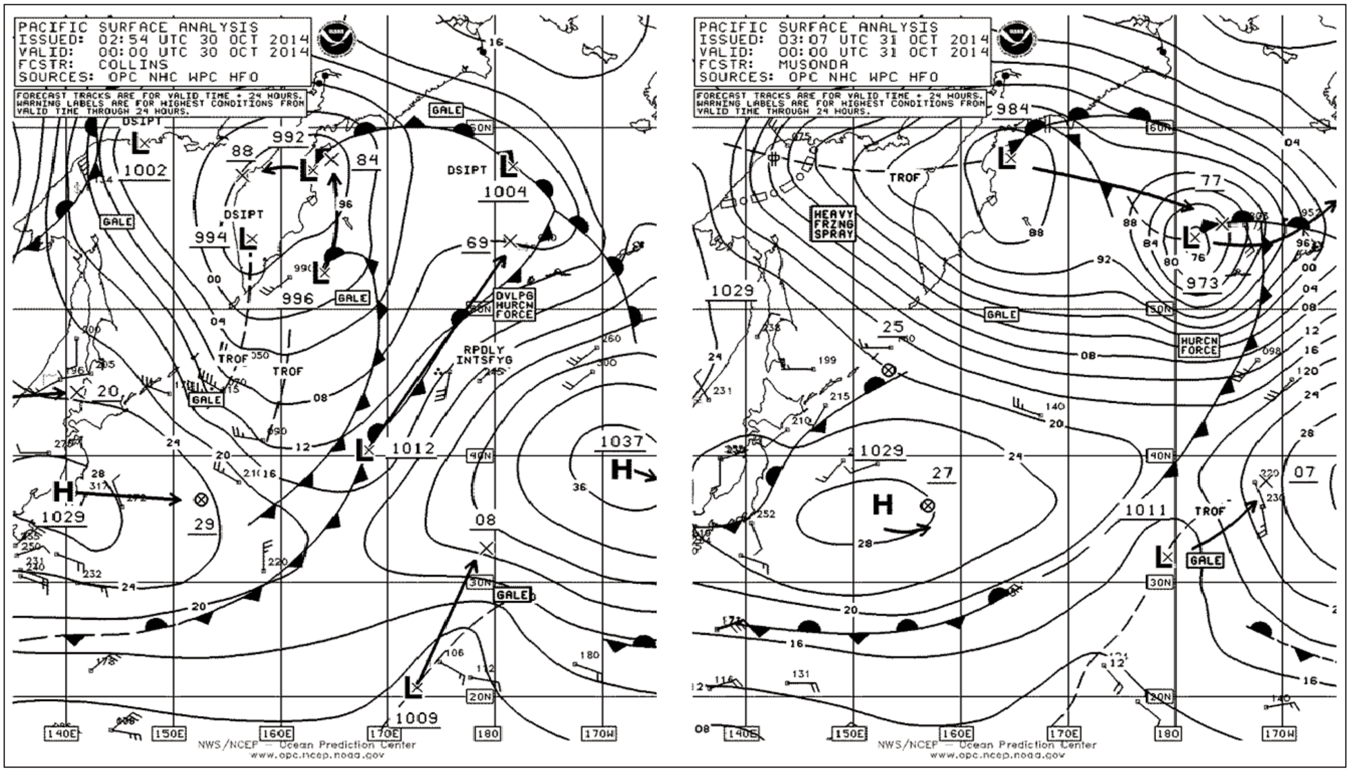


**Figure 14. OPC North Pacific Surface Analysis charts (Part 2) valid 0000 UTC October 30 and 31, 2014.**

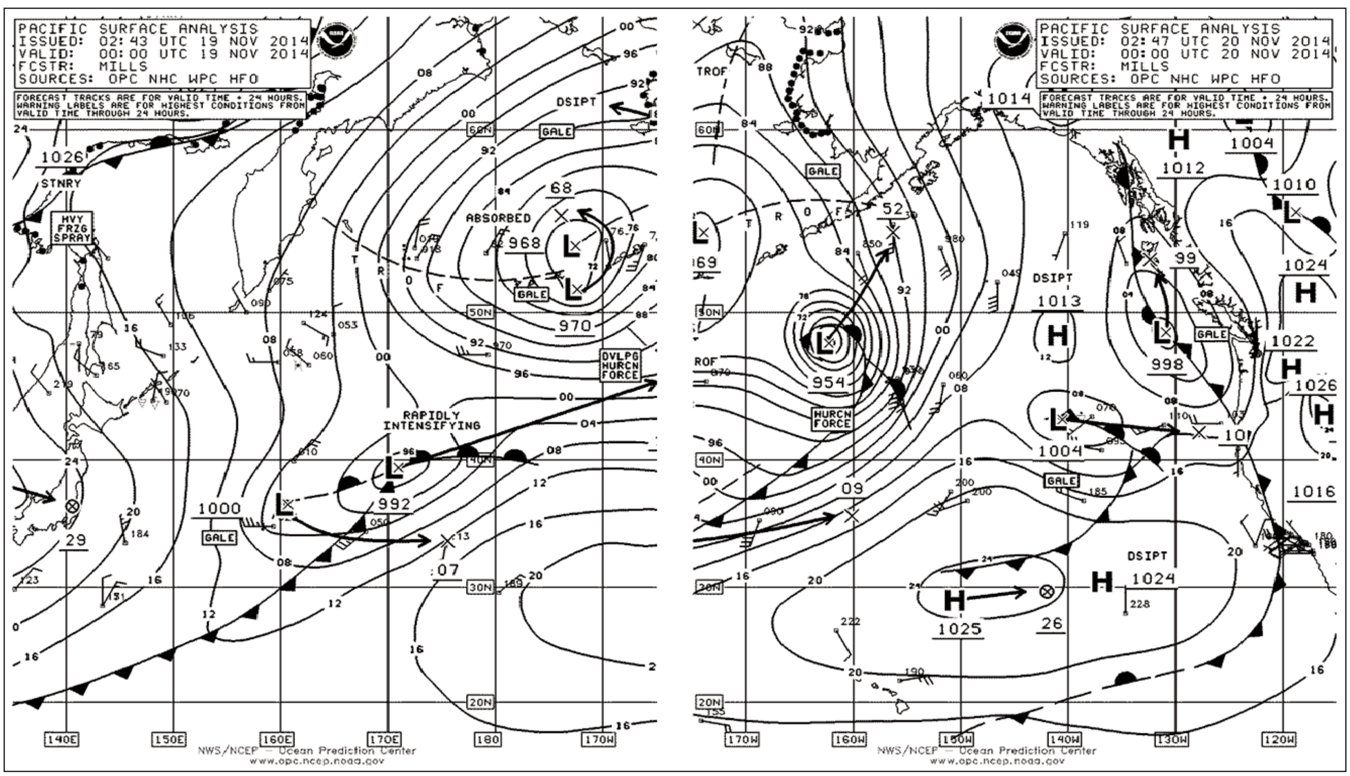


**Figure 15. OPC North Pacific Surface Analysis charts valid 0000 UTC November 19 (Part 2) and 0000 UTC November 20, 2014 (Part 1).**

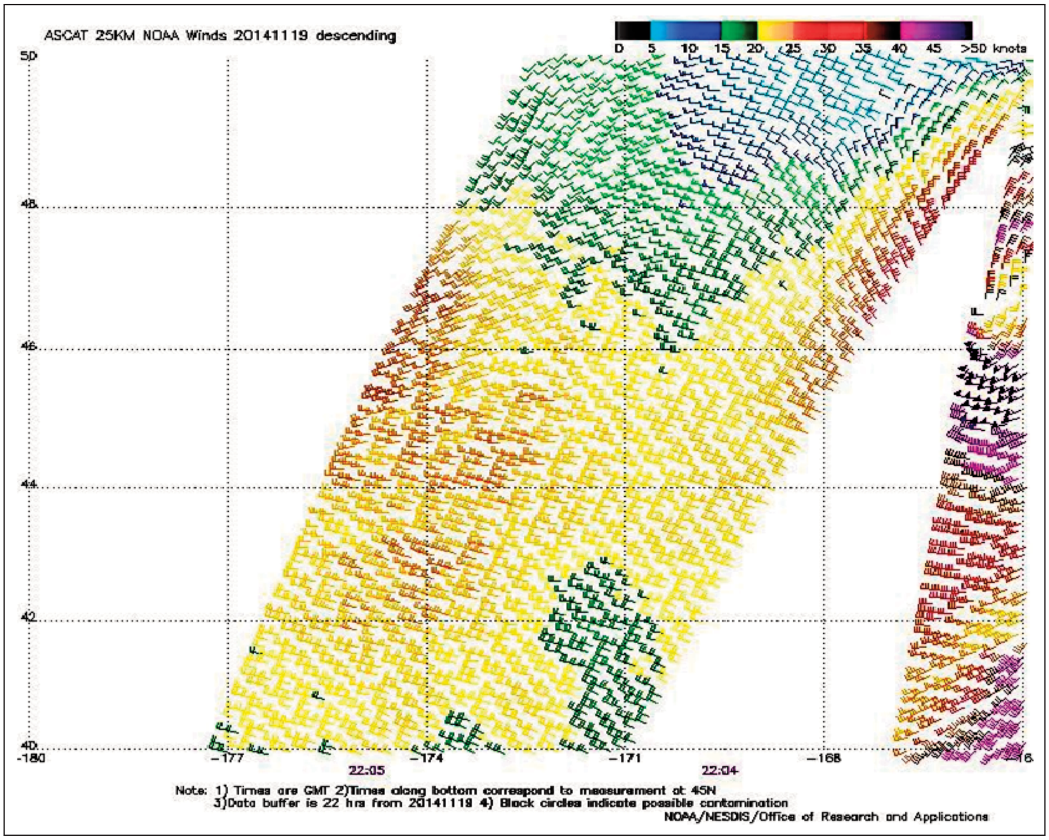


**Figure 16. ASCAT (METOP-A) image of satellite-sensed winds (25-km resolution) around mainly the western semicircle of the cyclone shown in the second part of Figure 15. The valid time of the pass is 2204 UTC November 19, 2014, or about two hours prior to the valid time of the second part of Figure 15. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research.**

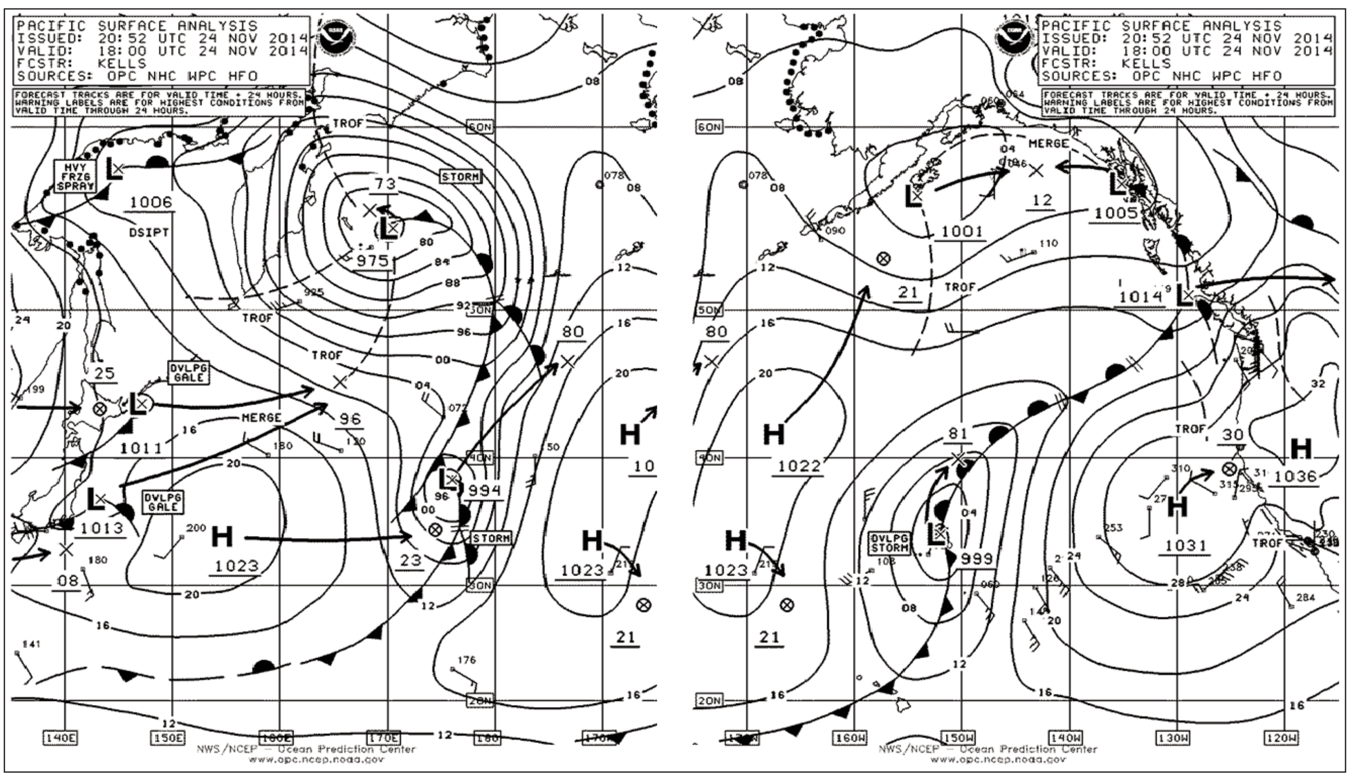


**Figure 17. OPC North Pacific Surface Analysis charts (Parts 1 and 2) valid 1800 UTC November 24, 2014. The two parts overlap between 165W and 175W.**

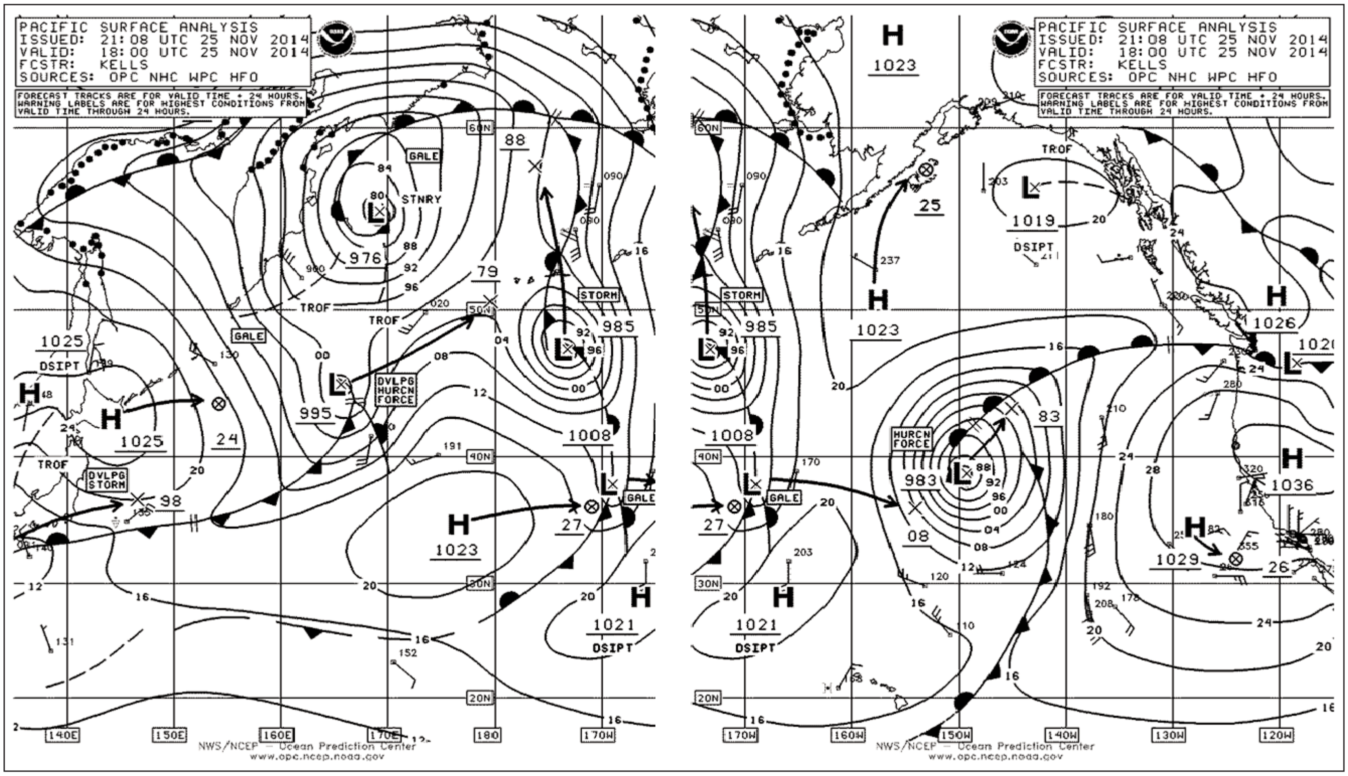


**Figure 18. OPC North Pacific Surface Analysis charts (Parts 1 and 2) valid 1800 UTC November 25, 2014. The two parts overlap between 165W and 175W.**

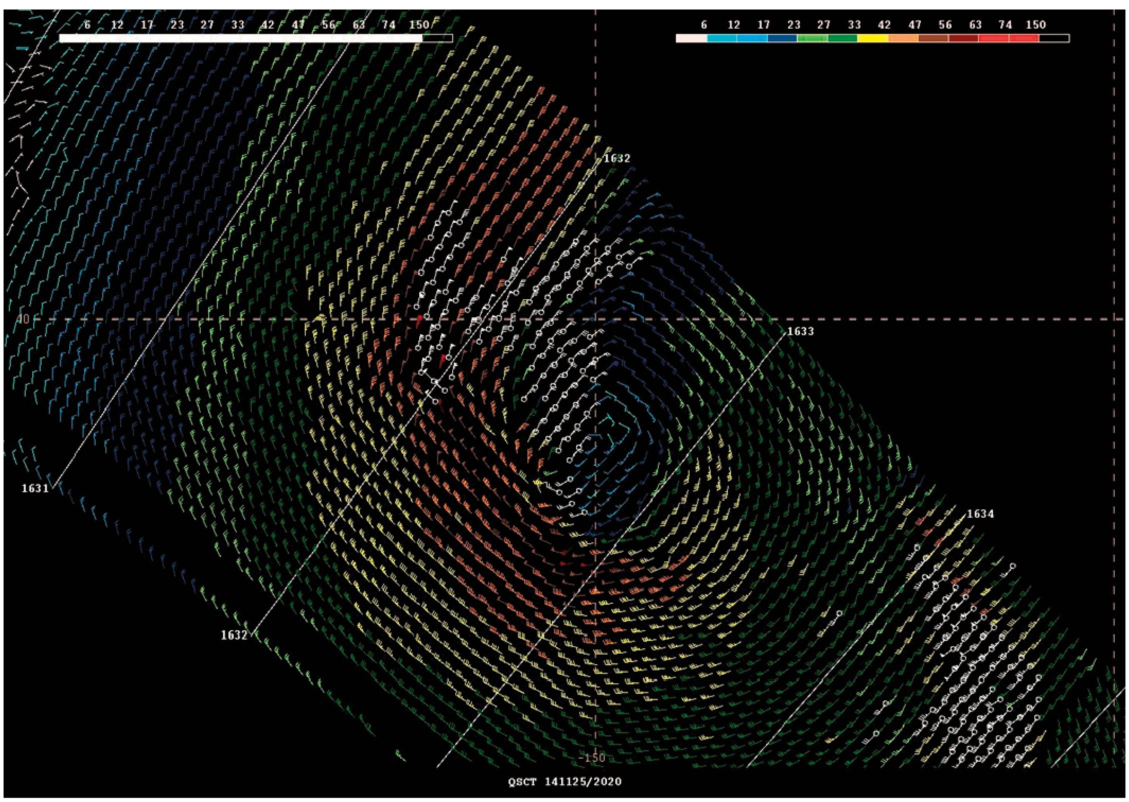


**Figure 19. Rapidscat image of satellite-sensed winds (25-km resolution) around the hurricane-force low shown in the second part of Figure 18. The valid time of the pass is approximately 1633 UTC November 25, 2014, or about one and one-half hours prior to the valid time of Figure 18. In this version of the imagery adapted for operational use, the numbered white lines (four-digit UTC) are cross-track time lines of the satellite (in this case, the instrument aboard the International Space Station). Wind barbs are colored according to the scale at the top, with white barbs rain-flagged. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research.**

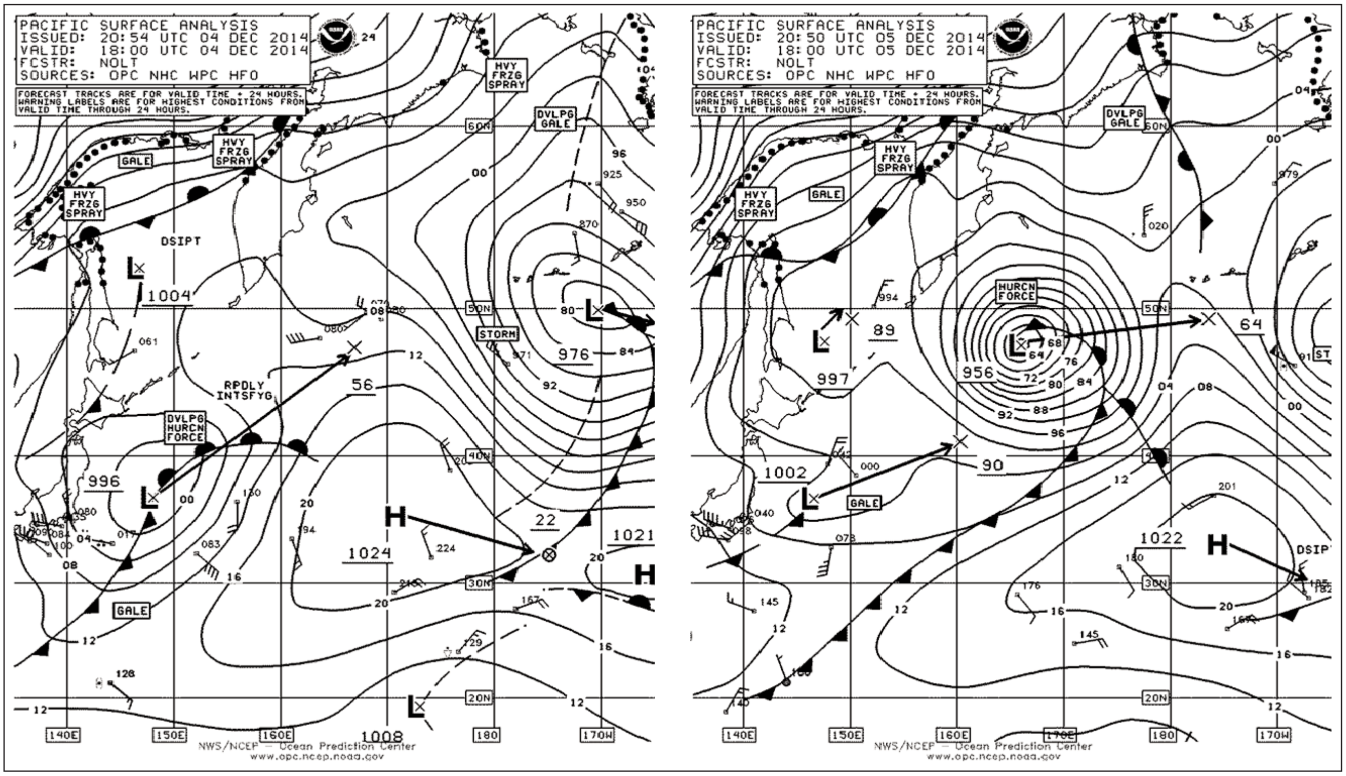


**Figure 20. OPC North Pacific Surface Analysis charts (Part 2) valid 1800 UTC December 4 and 5, 2014.**

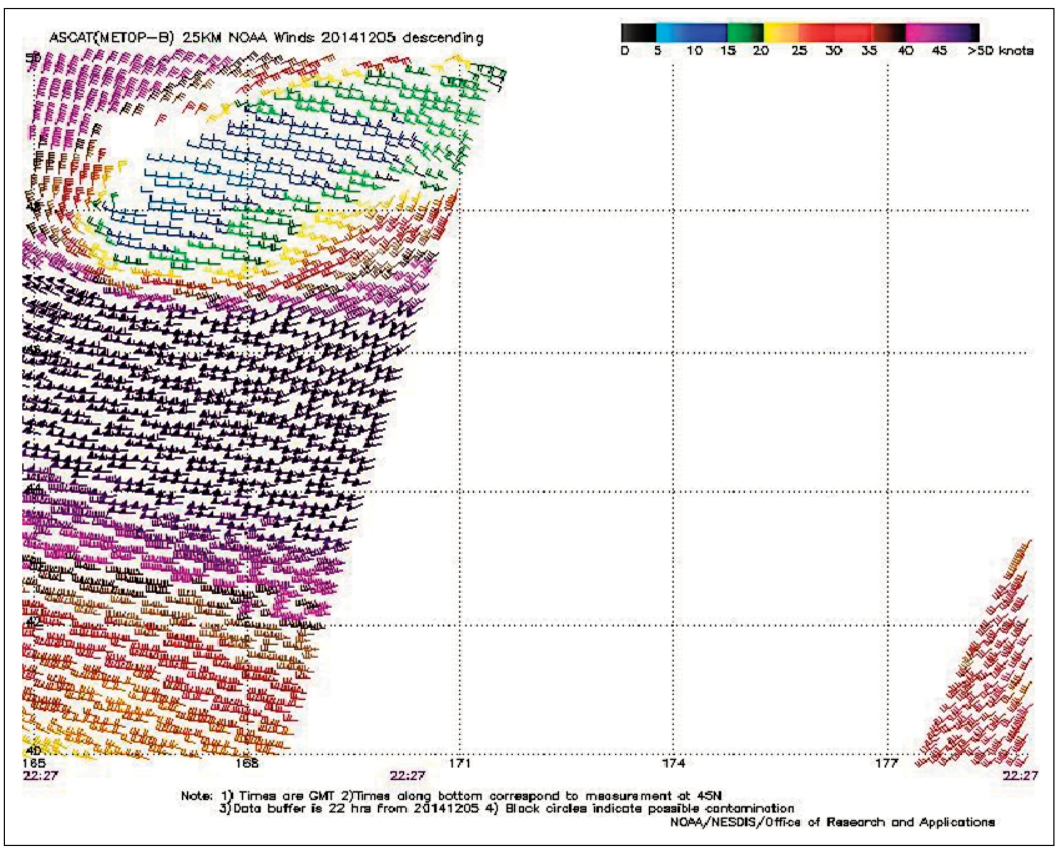


**Figure 21. ASCAT (METOP-B) image of satellite-sensed winds (25-km resolution) around the cyclone shown in the second part of Figure 20. The valid time of the pass is 2227 UTC December 5, 2014 or about four and one-half hours later than the valid time of the second part of Figure 20. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research.**

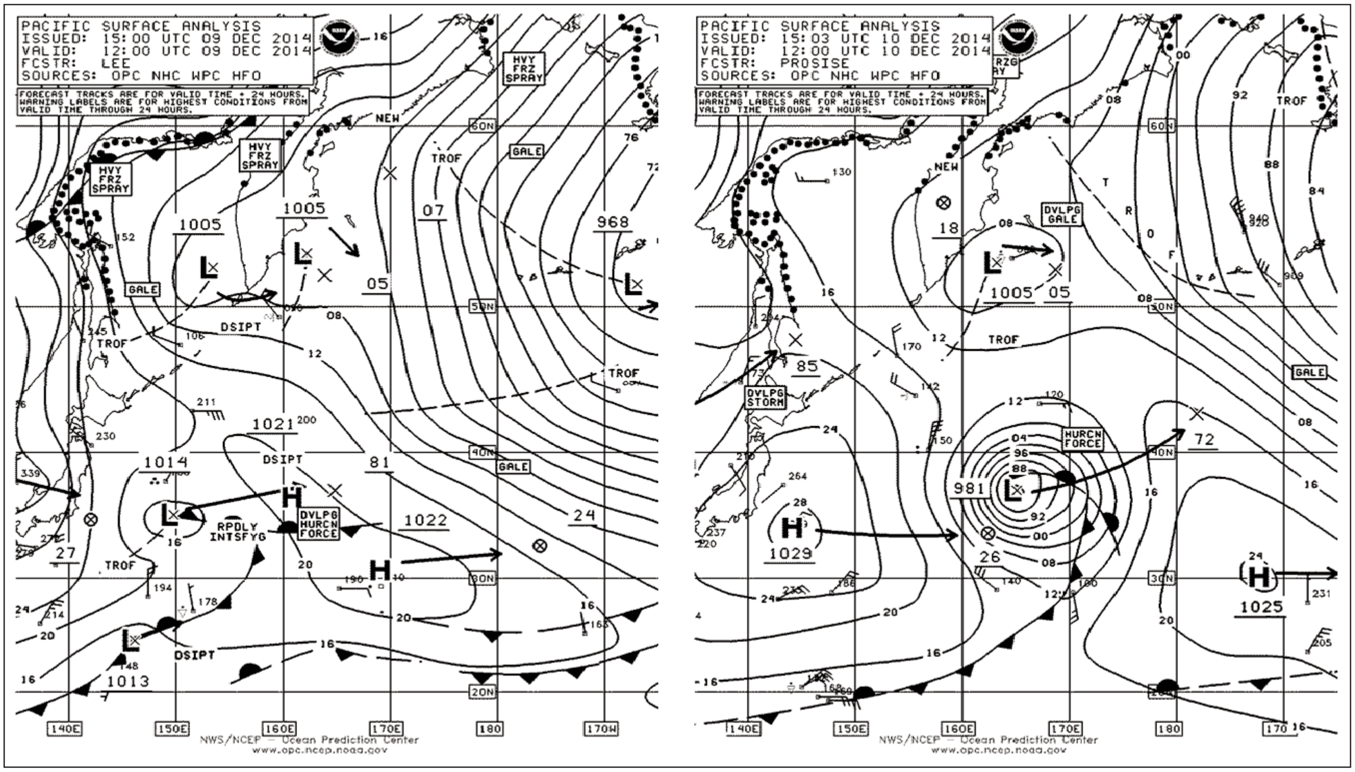


**Figure 22. OPC North Pacific Surface Analysis charts (Part 2) valid 1200 UTC December 9 and 10, 2014.**

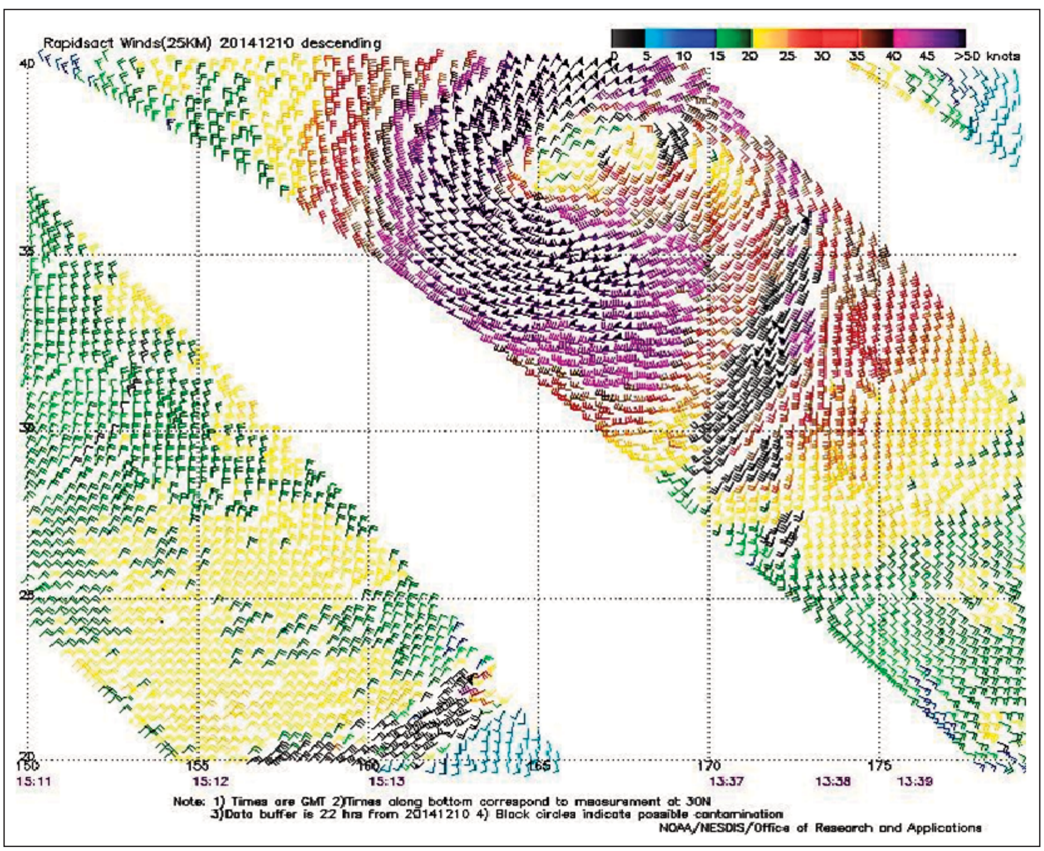


**Figure 23. Rapidscat image of satellite-sensed winds (25-km resolution) around the hurricane-force low shown in the second part of Figure 22. The valid time of the pass containing the higher wind retrievals is 1339 UTC December 10, 2014, or about one and one-half hours later than the valid time of the second part of Figure 22. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research.**

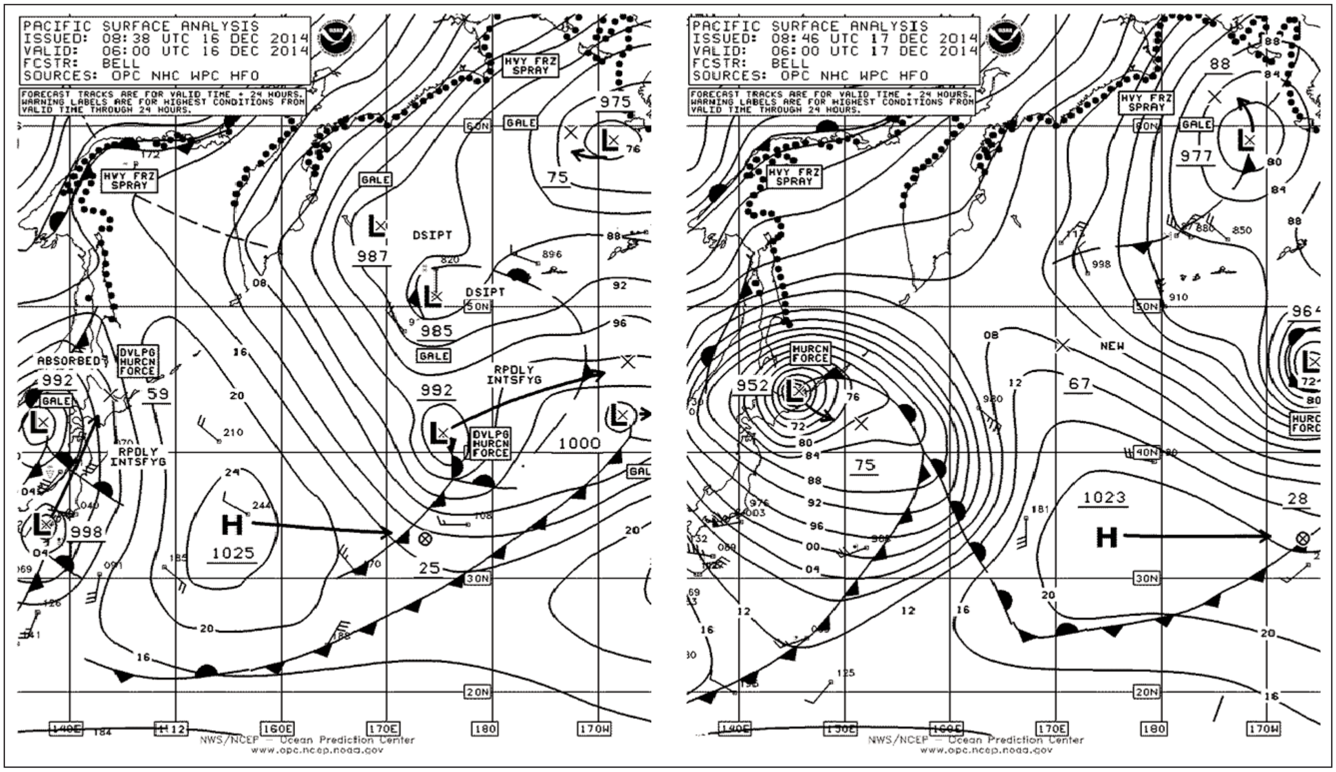


**Figure 24. OPC North Pacific Surface Analysis charts (Part 2) valid 0600 UTC December 16 and 17, 2014.**

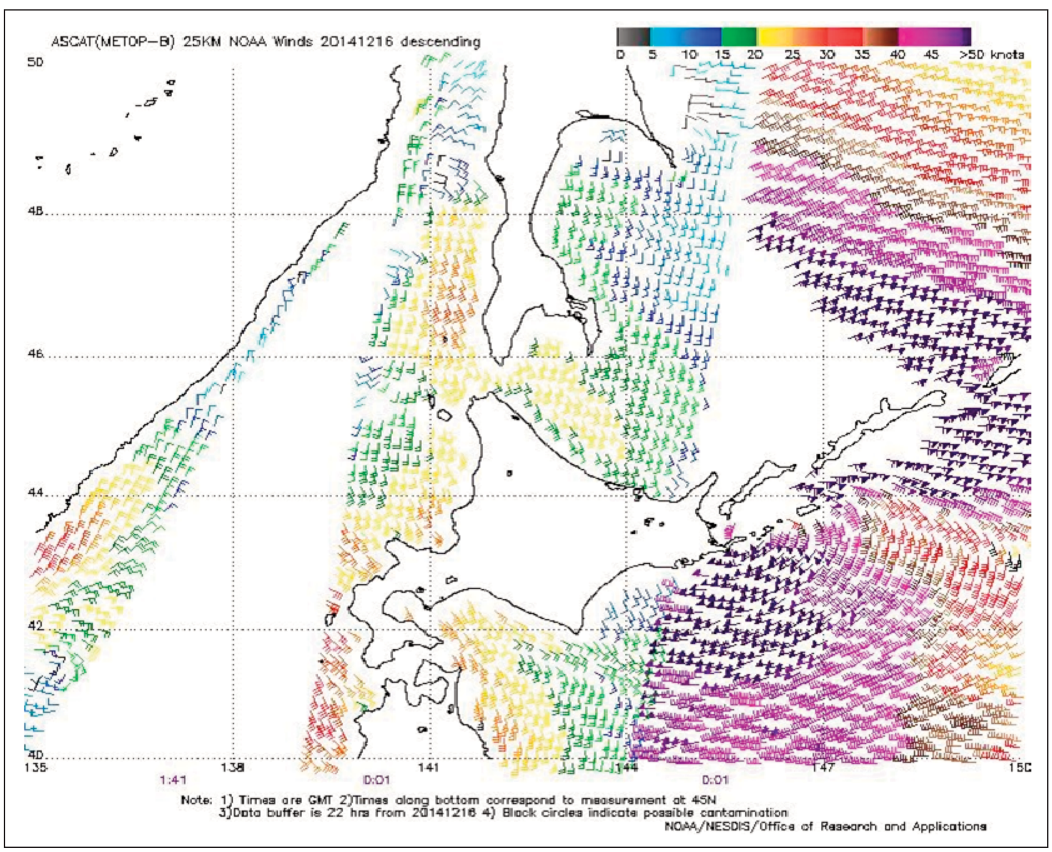


**Figure 25. ASCAT (METOP-B) image of satellite-sensed winds (25-km resolution) around the hurricane-force low shown in the second part of Figure 24. The valid time of the eastern pass containing the higher wind retrievals is 0001 UTC December 17, 2014, or about six hours prior to the valid time of the second part of Figure 26. The adjacent pass to the west is an old pass from 0001 UTC December 16. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research.**

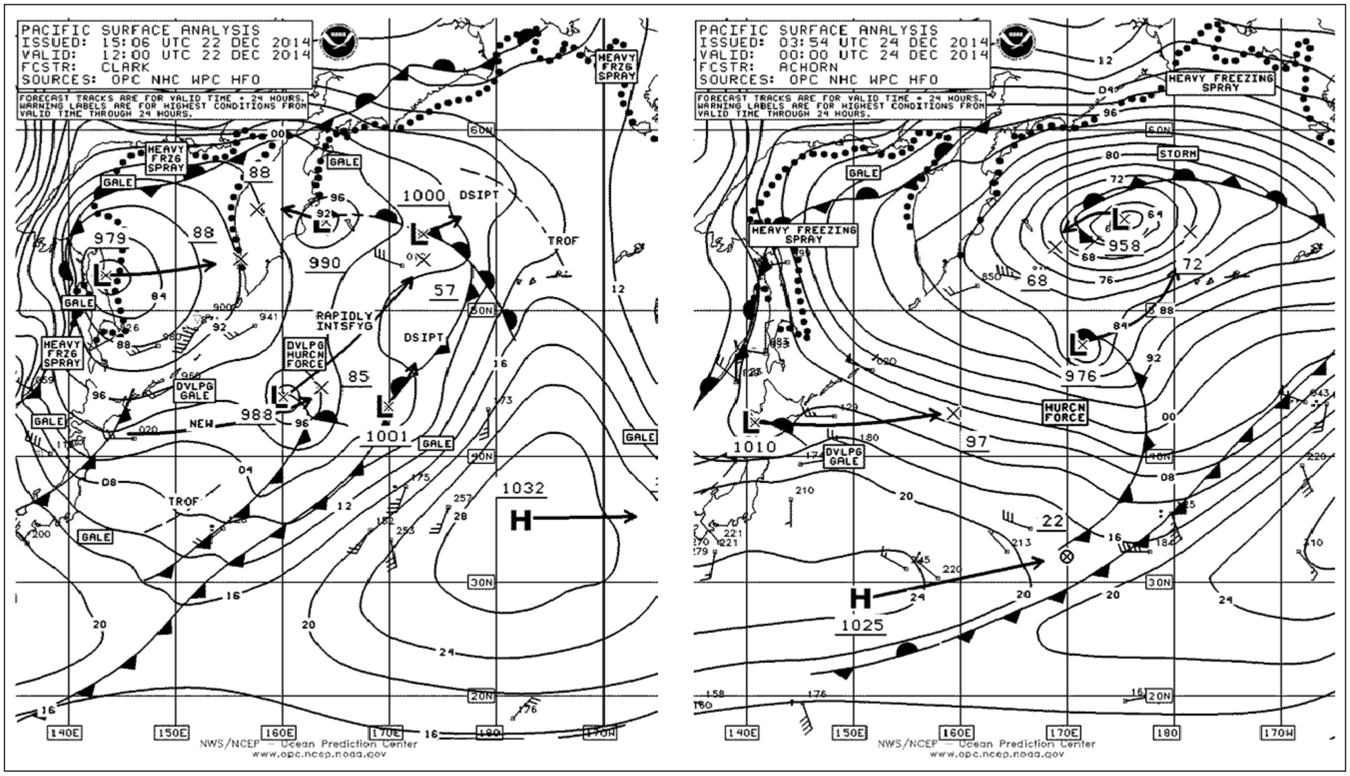


**Figure 26. OPC North Pacific Surface Analysis charts (Part 2) valid 1200 UTC December 22 and 0000 UTC December 24, 2014.**

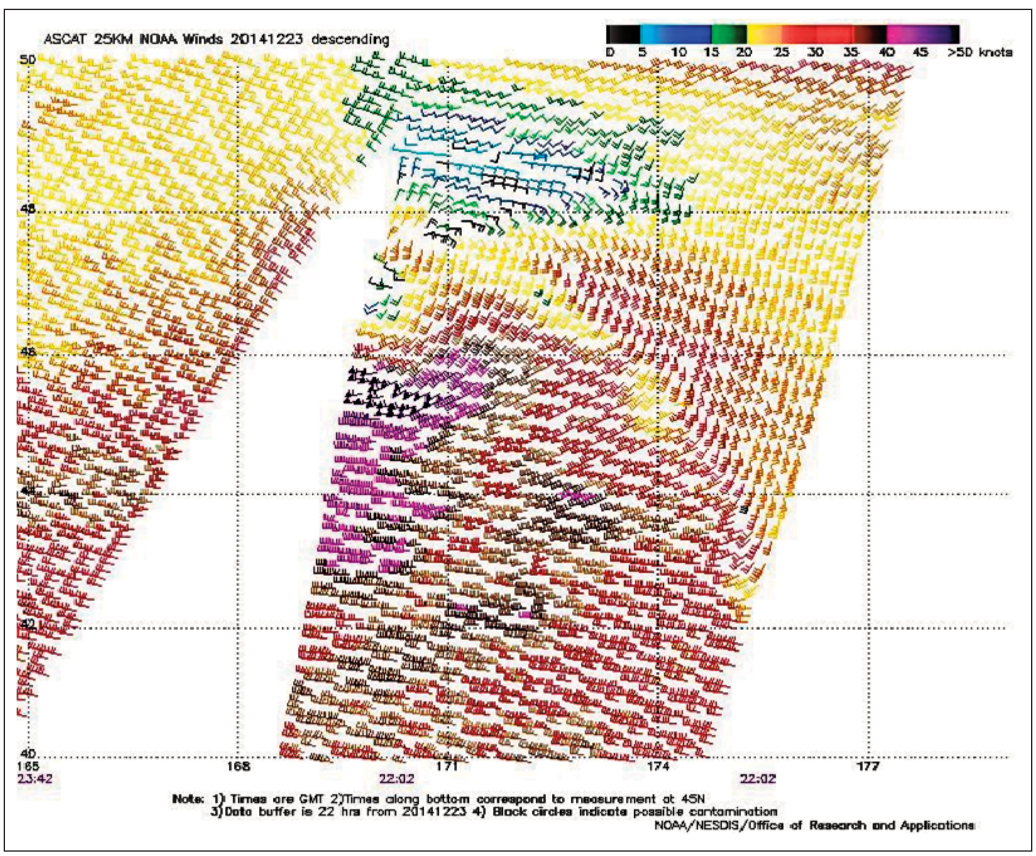


**Figure 27. ASCAT (METOP-A) image of satellite-sensed winds (25-km resolution) around the hurricane-force cyclone shown in the second part of Figure 26. The valid time of the pass containing the higher wind retrievals is 2202 UTC December 23, 2014 or about two hours prior to the valid time of the second part of Figure 26. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research.**

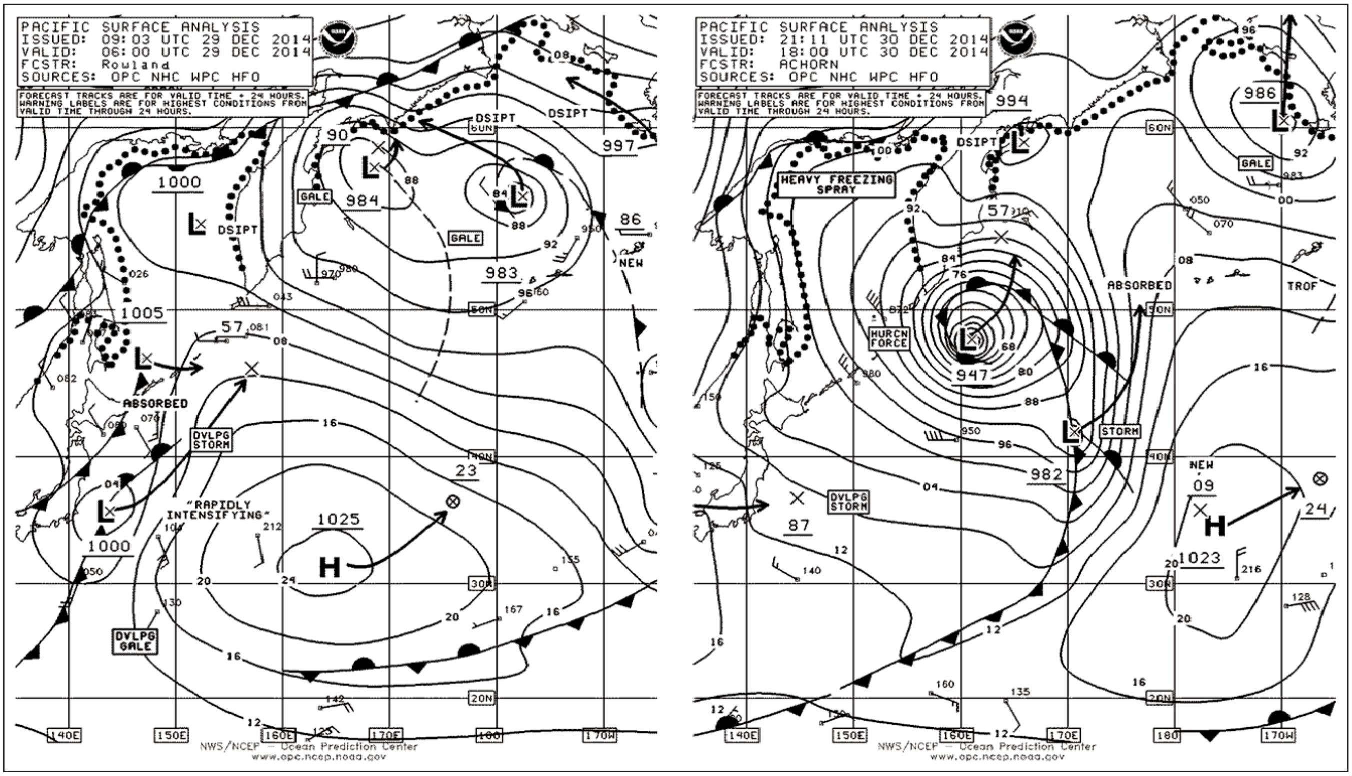


**Figure 28. OPC North Pacific Surface Analysis charts (Part 2) valid 0600 UTC December 29 and 1800 UTC December 30, 2014.**

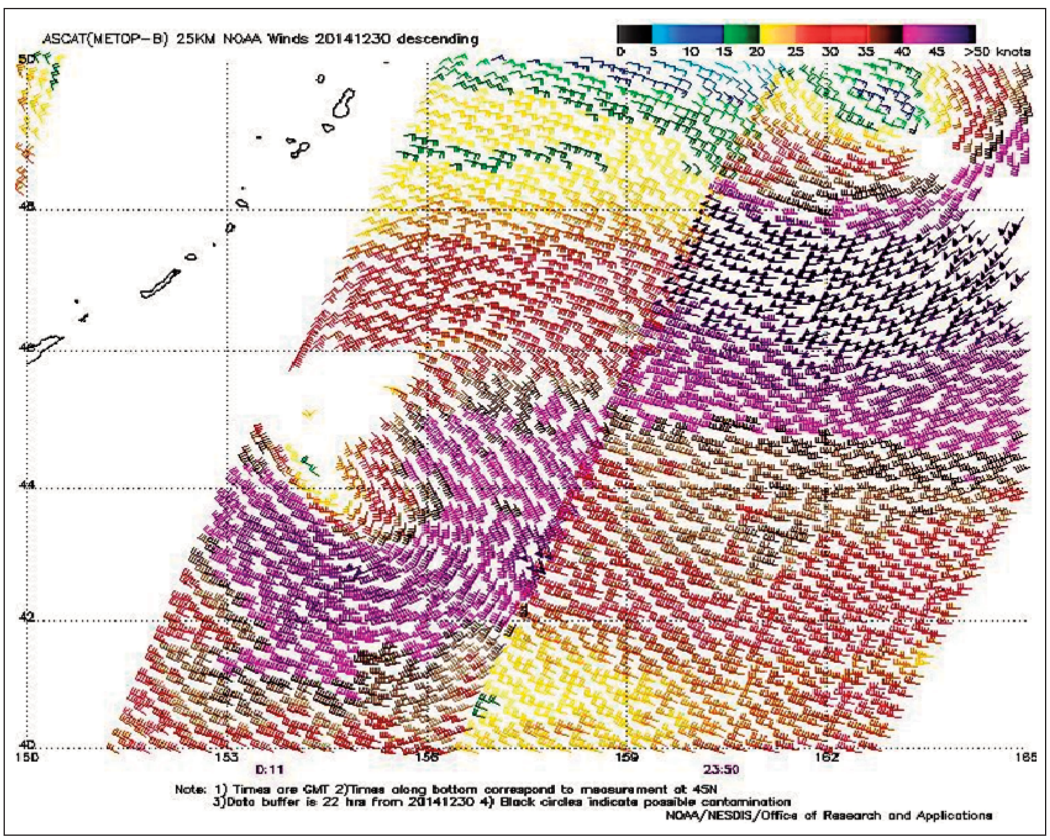


**Figure 29. ASCAT (METOP-A) image of satellite-sensed winds (25-km resolution) around the intense cyclone shown in the second part of Figure 28. The valid time of the eastern pass containing the strongest winds is 2350 UTC December 30, 2014 or about six hours later than the valid time of the second part of Figure 28. The other (western) pass is an older pass from 0011 UTC December 30. Portions of the Kurile Islands appear in the upper-left side of the image. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research.**

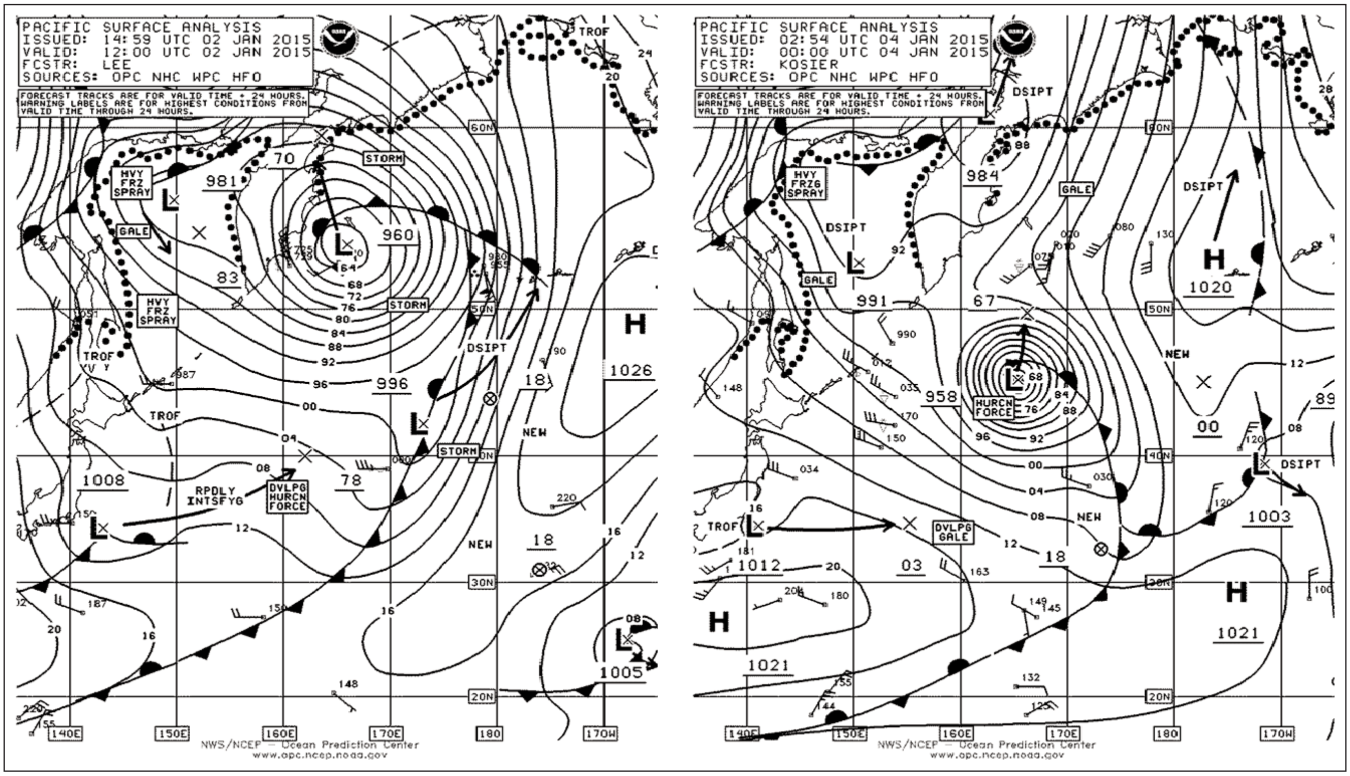


**Figure 30. OPC North Pacific Surface Analysis charts (Part 2) valid 1200 UTC January 2 and 0000 UTC January 4, 2015.**

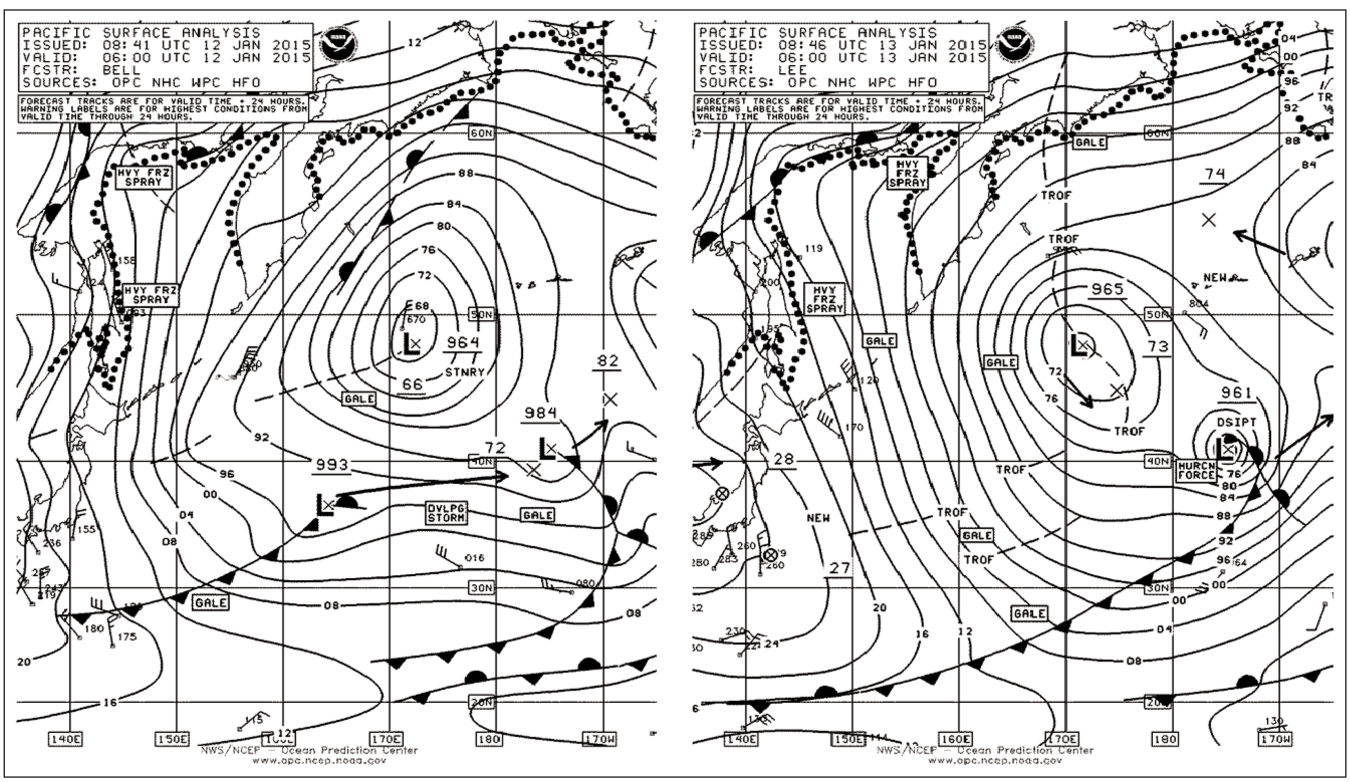


**Figure 31. OPC North Pacific Surface Analysis charts (Part 2) valid 0600 UTC January 12 and 13, 2015**

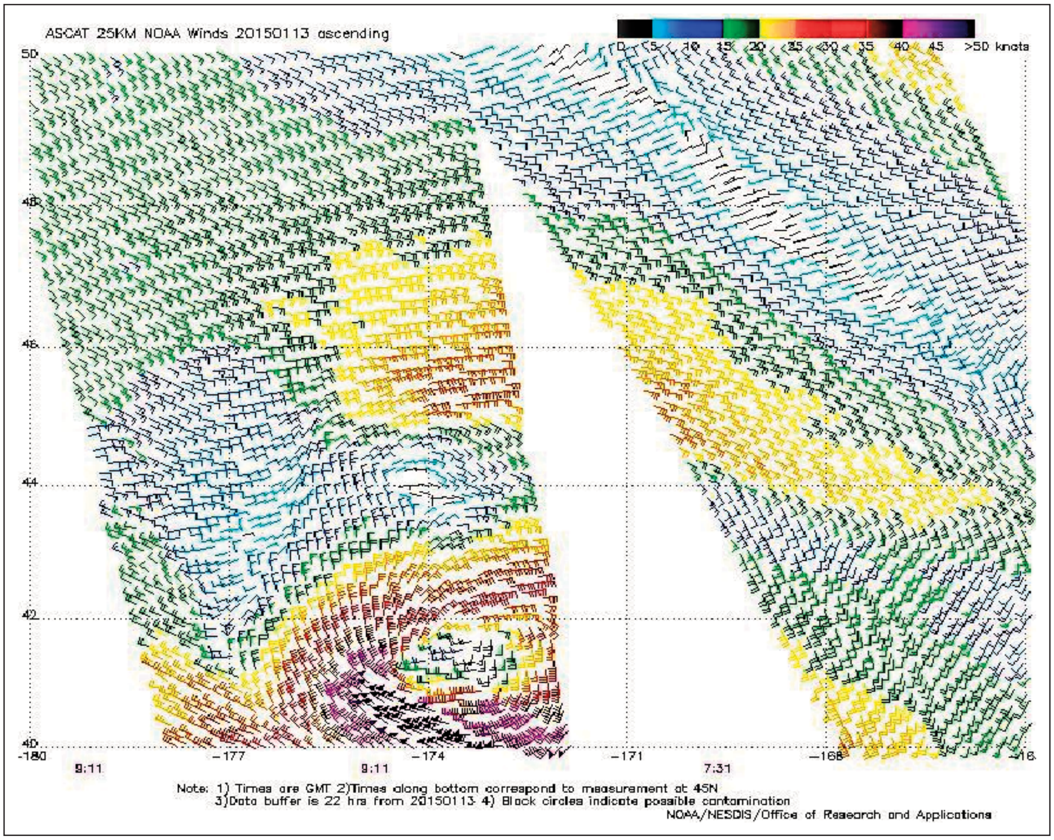


**Figure 32. ASCAT (METOP-A) image of satellite-sensed winds (25-km resolution) around the hurricane-force cyclone shown in the second part of Figure 31. The valid time of the pass containing the strongest winds is 0911 UTC January 13, 2015, or about three hours later than the valid time of the second part of Figure 31. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research.**

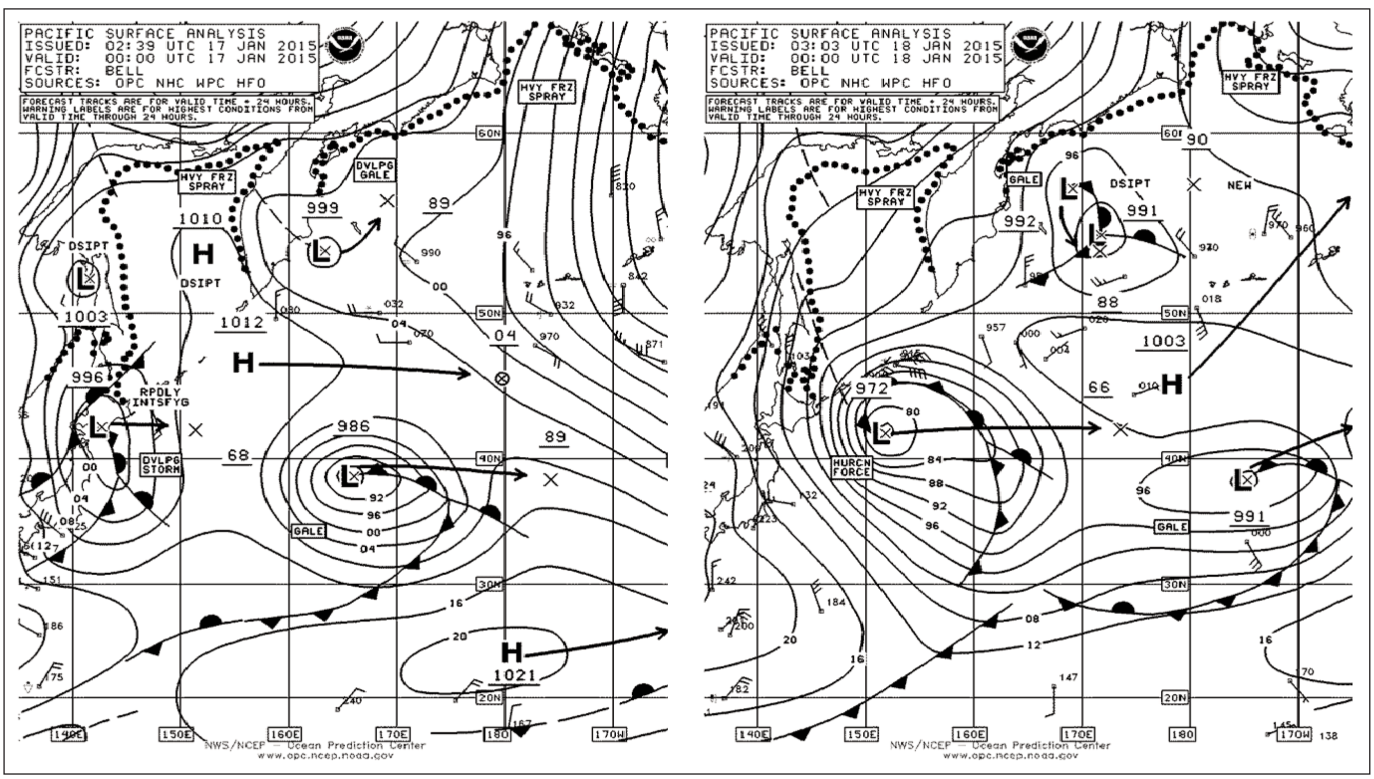


**Figure 33. OPC North Pacific Surface Analysis charts (Part 2) valid 0000 UTC January 17 and 18, 2015.**

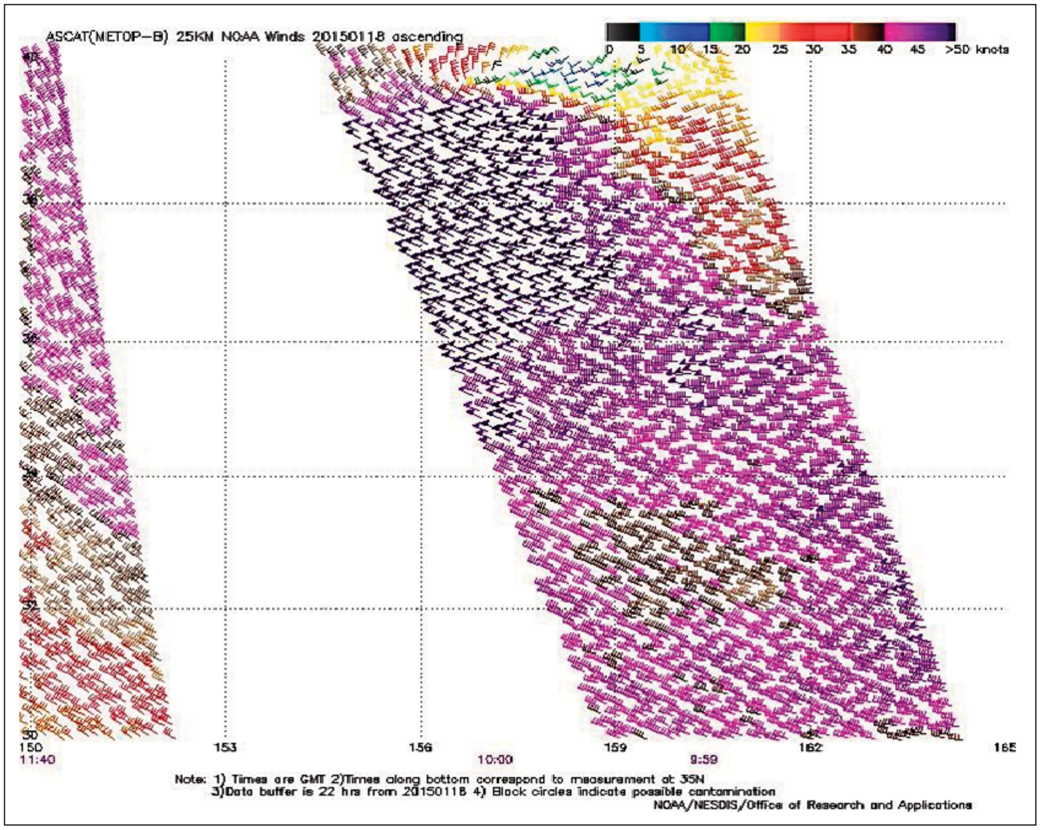


**Figure 34. ASCAT (METOP-A) image of satellite-sensed winds (25-km resolution) around the south side of the hurricane-force low shown in the second part of Figure 33. The valid time of the pass containing the higher wind retrievals is 0959 UTC January 18, 2015, or about ten hours later than the valid time of the second part of Figure 33. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research.**

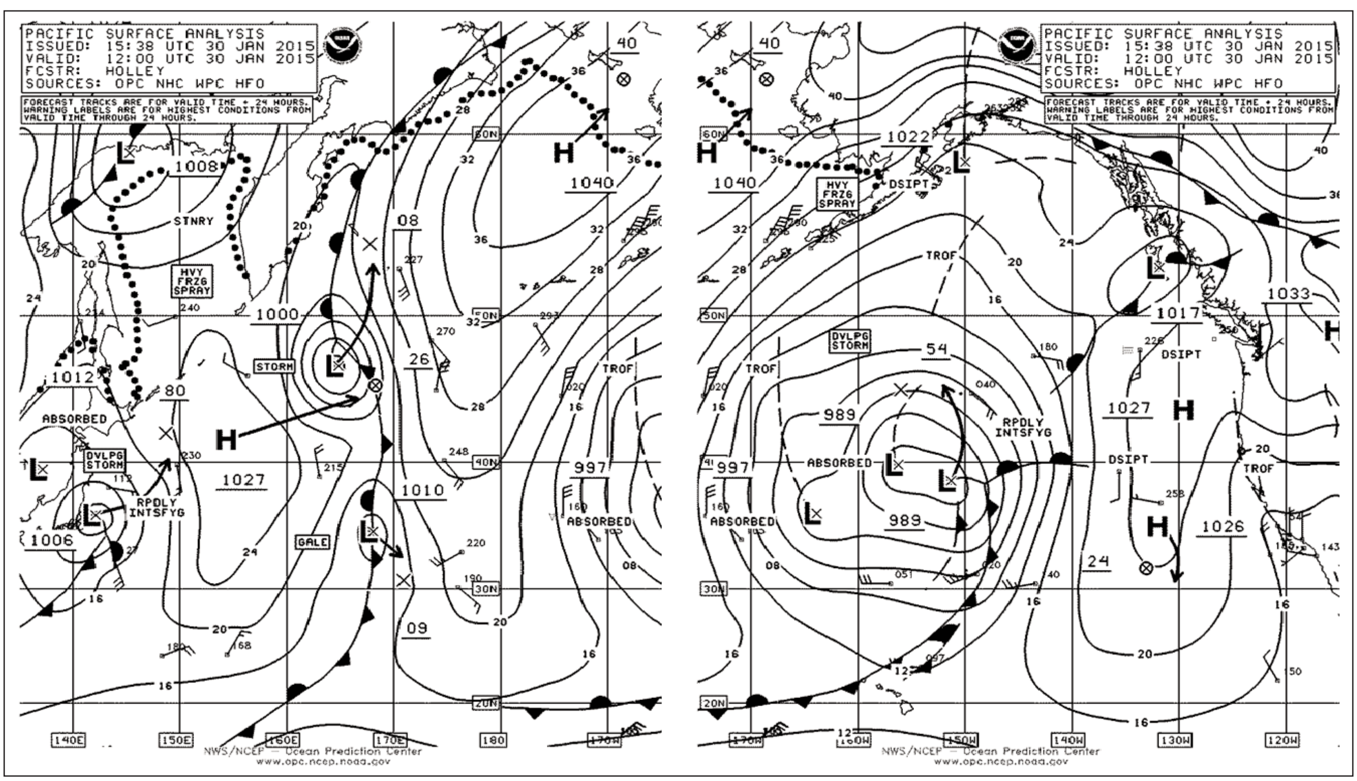


**Figure 35. OPC North Pacific Surface Analysis charts (Parts 1 and 2) valid 1200 UTC January 30 , 2015. The two parts have an overlap area between 165W and 175W.**

**North Pacific Storm, January 11-13:**

Figure 31 depicts the development of a compact 961 hPa hurricane force low over a 24 hour period from a weak low near 37N 164E. The central pressure fell 32 hPa during this time, impressive for that low latitude development. The ASCAT image in Figure 32 reveals a compact circulation with the highest wind retrievals of 60 kts. The **APL CHINA** (WDB3161) near 44N 163E at 1500 UTC on the 13th reported northwest winds of 40 kts and 5.2 m seas (17 ft). The lowest central pressure of 957 hPa occurred later; at 0000 UTC on the 14th near 46N 167W after the winds had weakened to storm force. The cyclone then dissipated by early on the 15th as new gale force lows formed to the northeast and southwest.

**Western North Pacific Storm, January 15-16:**

As the previous event was ending, a new gale force low passed just south of Japan late on January 14th and developed storm force winds while passing east of Japan early on the 15th, and briefly hurricane force near 39N 154E with a central pressure as low as 981 hPa at 0600 UTC on the 16th. A vessel with the **SHIP** call sign reported west winds of 35 kts and 6.0 m seas (20 ft) near 35N 141E at 1500 UTC on the 15th. The cyclone then tracked east along 39N with its winds weakening to gale force 18 hours later. Figure 33 shows this system as a weakening gale. It subsequently moved into the eastern Pacific on the 18th and then turned north into the Gulf of Alaska by the 20th, and dissipated by the 21st.

**Western/ Central North Pacific Storm, January 17-20:**

A stronger cyclone developed and moved east of northern Japan late on January 16th and on the 17th immediately following the preceding event (Figure 33). It briefly developed hurricane force winds late on the 17th and early on the 18th with the ASCAT image in Figure 34 showing a swath of west to northwest winds 50 to 60 kts south of the center and extending south to near 34N. The cyclone moved out over the North Pacific and developed a lowest central pressure of 958 hPa near 43N 175E at 1200 UTC on the 19th, but its top winds had weakened to storm force early on the preceding day. The **BREMEN EXPRESS** (DHBN) near 41N 143E reported northwest winds of 55 kts at 1800 UTC on the 17th, and 12 hours later northwest winds of 50 kts and 6.4 m seas (21 ft) near 43N 147E).

The **COSCO GLORY** (VRIR7) encountered north winds of 45 kts and 8.5 m seas (28 ft) near 44N 149E at 0200 UTC on the 18th. The cyclone subsequently stalled near 47N 170W as a gale force low late on the 20th, then drifted southeast on the 22nd and dissipated on the 24th.

**Western North Pacific Storm, January 22-24:**

Low pressure originating well south of Japan near 26N on January 21st passed just east of Tokyo as a gale early on the 22nd. The cyclone tracked northeast and developed storm force winds 12 hours later and briefly hurricane force winds late on the 23rd as the center passed near 44N 153E. The central pressure fell 24 hPa in the 24 hour period ending at 1800 UTC on the 23rd. An ASCAT (METOP-A) pass from 2301 UTC on the 23rd returned winds to 50 kts on the south side but likely missed stronger winds in a data free gap. The cyclone developed a lowest central pressure of 966 hPa at 1800 UTC on the 23rd. The **TOKYO EXPRESS** (DGTX) near 37N 144E reported northwest winds of 50 kts at 1200 UTC on the 23rd.

The **SEA-LAND LIGHTNING** (WDB9986) near 48N 157E reported east winds of 50 kts and 7.0 m seas (23 ft) at 0000 UTC on the 24th, and then 12 hours later reported seas of 8.2 m (27 ft) near 47N 153E. A weakening trend set in late on the 23rd with the cyclone becoming a gale near 46N 170E early on the 25th. The cyclone spawned new centers to the northeast and became absorbed on the 26th.

**Western North Pacific Storm, January 30-February 2:**

Low pressure originating near Japan early on January 30th (Figure 35) developed hurricane force winds in the next 18 hours, and passed near 42N 149E with a lowest central pressure of 976 hPa at 1200 UTC on the 31st (Figure 36).

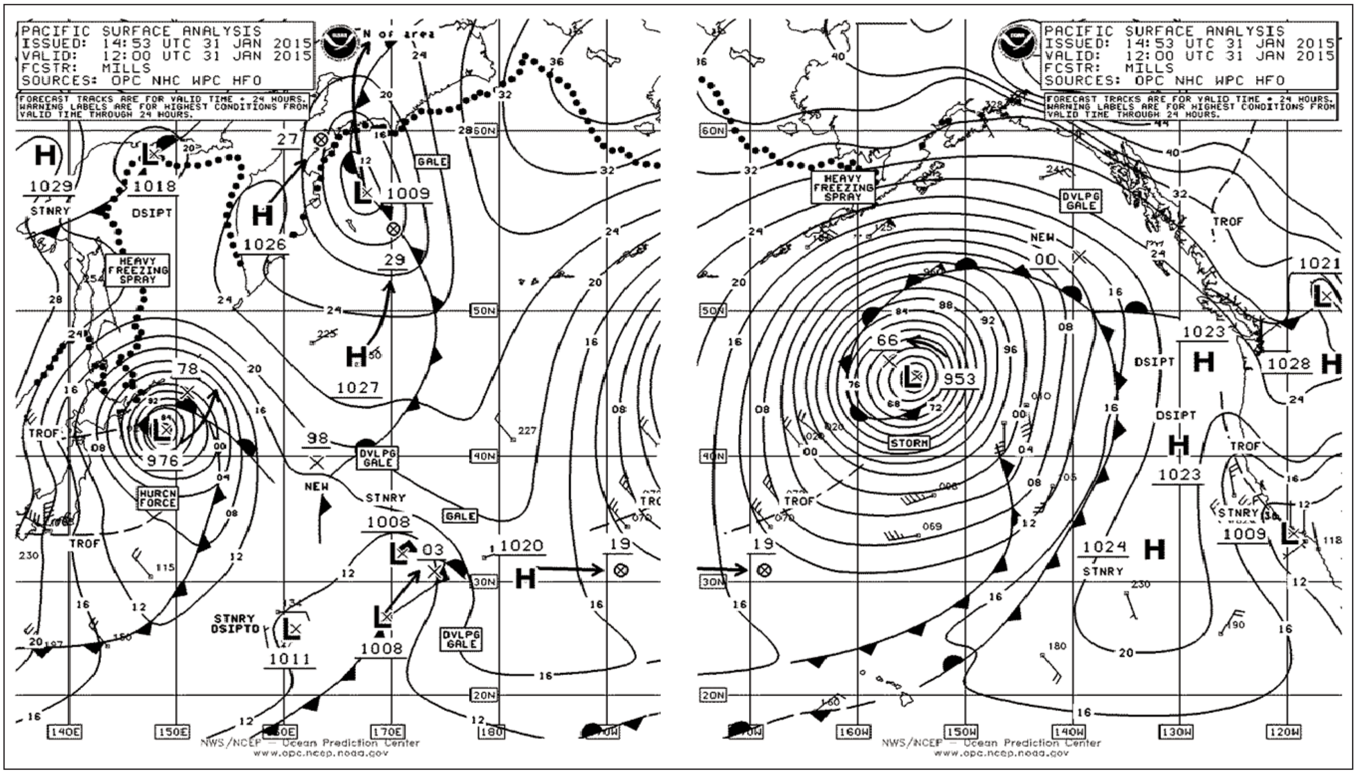


**Figure 36. OPC North Pacific Surface Analysis charts (Parts 1 and 2) valid 1200 UTC January 31 , 2015. The two parts have an overlap area between 165 W and 175W.**

The scatterometer image from 1032 UTC on the 31st (**Figure 37**) shows a swath of winds 50 to 60 kts on the south side of the cyclone. The cyclone then drifted northeast with its top winds weakening to storm force on the 31st and to gale force by 1800 UTC February 2nd near 44N 153E. The system then drifted southeast and dissipated late on the 3rd.

**Eastern North Pacific Storm, January 30-February 2:**

Concurrent with the western hurricane force event, a deep low formed in the eastern waters over a 24 hour period as depicted in **Figure 35** and **Figure 36**. The 953 hPa central pressure reached at 1200 UTC January 31st made this cyclone the deepest of the January to February period. The central pressure fell 36 hPa during 24 hour period. The scatterometer image in **Figure 38** returned winds to 50 kts north, south and west of the center but the data free gap might miss higher winds, and for warning purposes OPC considers this system a storm force low. The cyclone then stalled near 46N 157W through February 2nd and weakened to a gale, and then moved west northwest as a sub gale force low, blocked by high pressure to the north. The cyclone dissipated near 180W on the 6th.

**Western North Pacific Storm, February 18-19:**

An area of low pressure passed just south of Japan on February 17th. **Figure 39** depicts the subsequent development of this slow moving system into a storm force low, with the second part of **Figure 39** showing the cyclone at maximum intensity. The ASCAT-B image in **Figure 40** winds to 50 kts on the south and west sides close to the center. This system, aided by its passage over relatively warm southern waters, appeared to be the one coming closest to hurricane force during February. The cyclone continued slow eastward motion and maintained storm force winds through the 19th, before weakening to a gale early on the 20th. The cyclone then spawned a new storm center to the north near 37N 163E at 0000 UTC on the 21st with the centers merging late on the 21st near 37N 176E while maintaining gale to storm force winds. The cyclone then dissipated near 35N 164W late on the 26th.

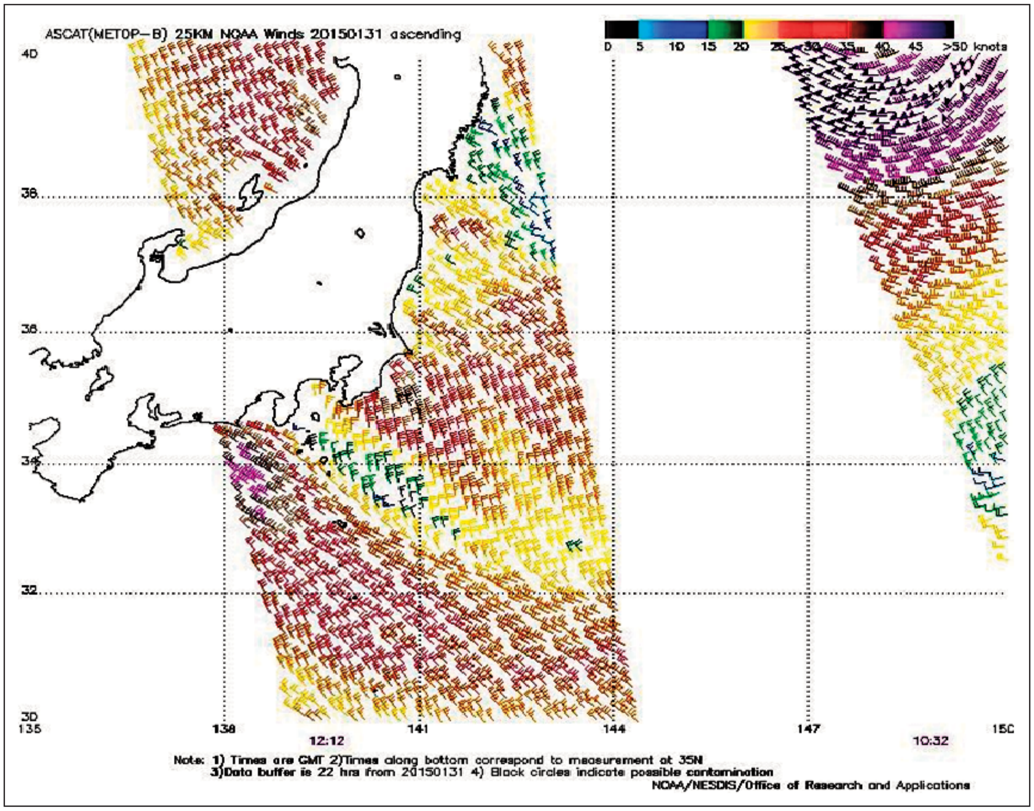


**Figure 37. ASCAT (METOP-B) image of satellite-sensed winds (25-km resolution) around the south side of the hurricane-force low near Japan shown in Figure 36. The valid time of the eastern pass containing the higher wind retrievals is 1032 UTC January 31, 2015, about one and one-half hours prior to the valid time of Figure 36. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research.**

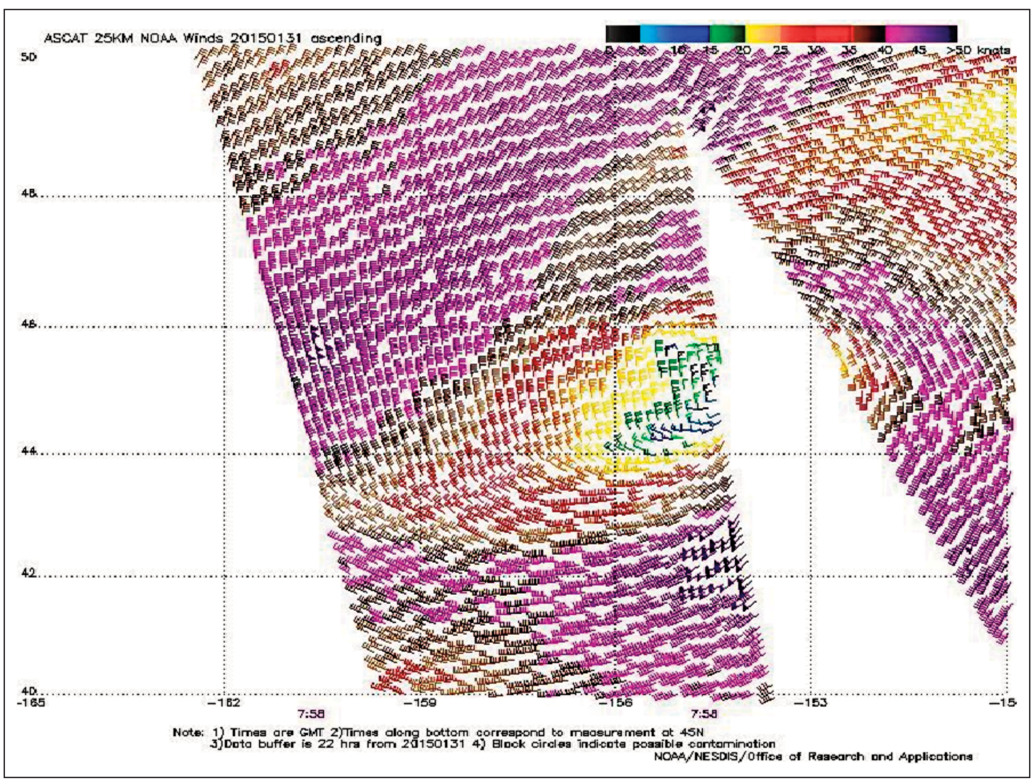


**Figure 38. ASCAT (METOP-A) image of satellite-sensed winds (25-km resolution) around the eastern North Pacific storm shown in Figure 36. The valid time of the pass is 0758 YUTC January 31, 2015, or about one and four hours prior to the valid time of Figure 36. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research.**

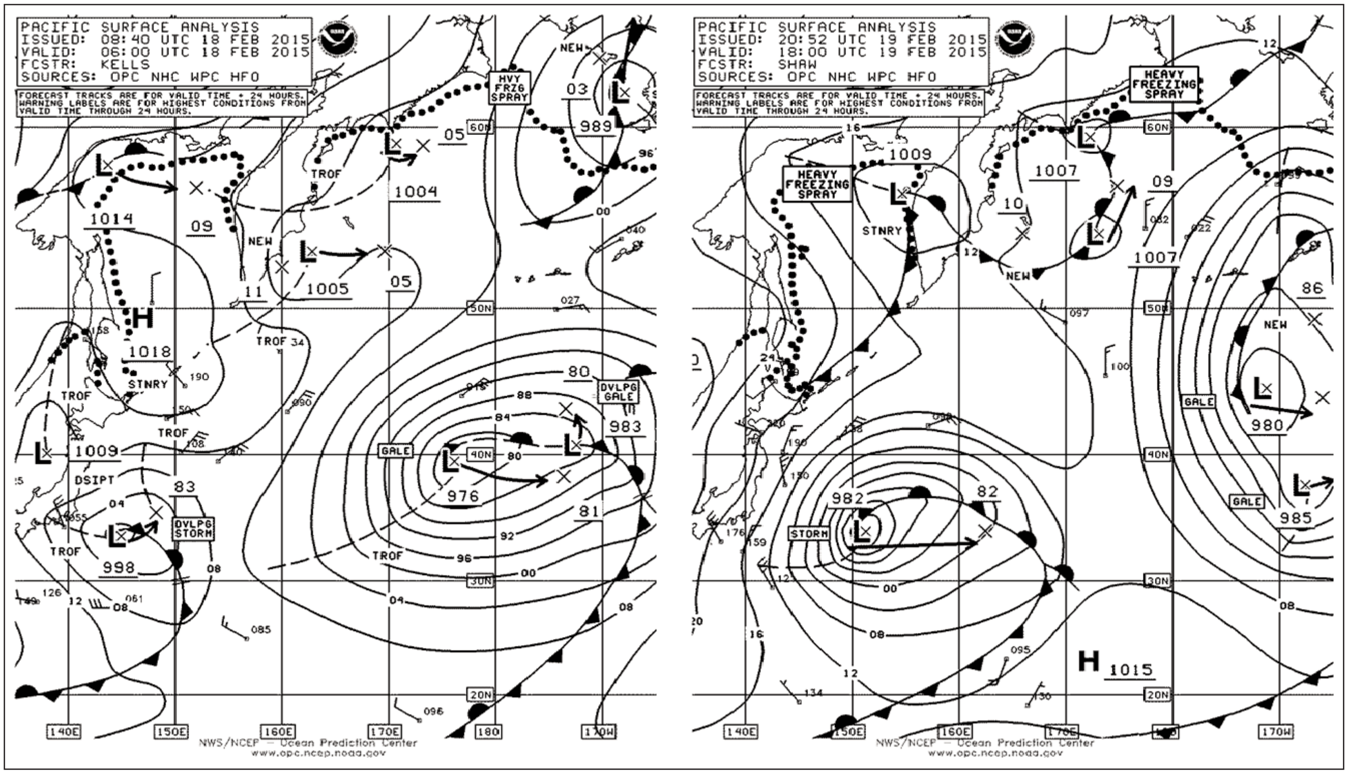


**Figure 39. OPC North Pacific Surface Analysis charts (Part 2) valid 0600 UTC February 18 and 1800 UTC February 19, 2015.**

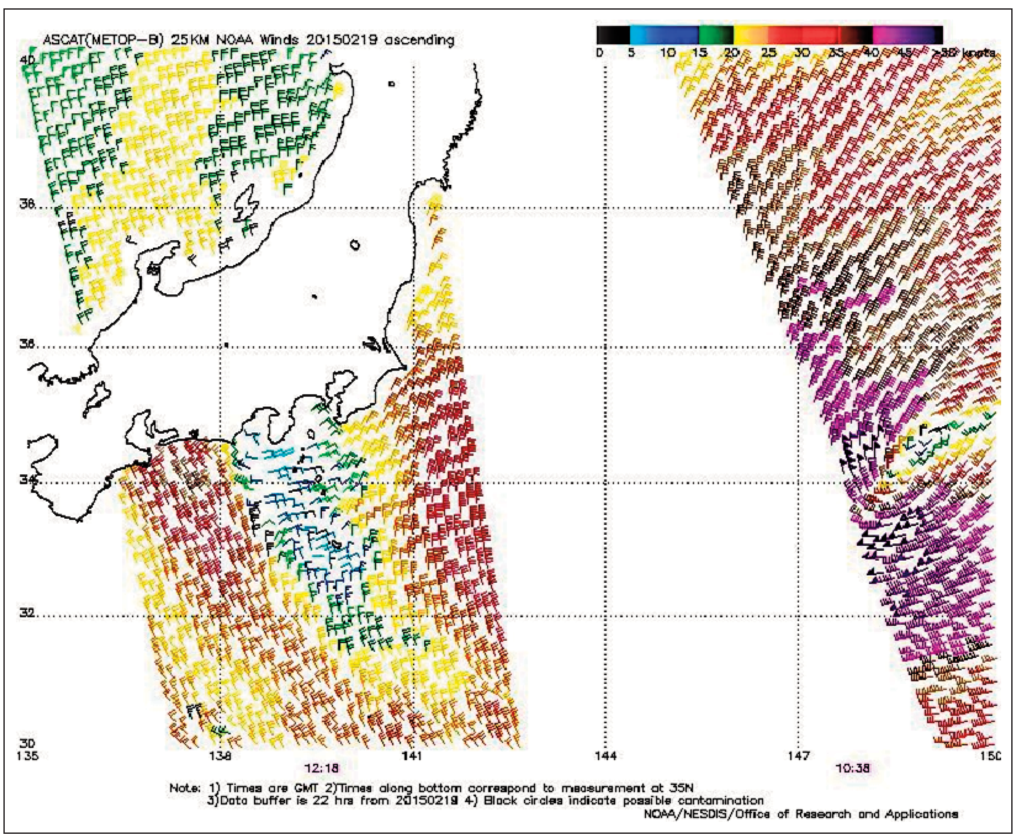


**Figure 40. ASCAT (METOP-B) image of satellite-sensed winds (25-km resolution) around the storm shown in the second part of Figure 39. The valid time of the eastern pass containing the higher wind retrievals is 1038 UTC February 19, 2015, or about seven and one-half hours prior to the valid time of the second part of Figure 39. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research.**

## References


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3. VonAhn, Joan. and Sienkiewicz, Joe, "Hurricane Force Extratropical Cyclones Observed Using QuikSCAT Near Real Time Winds", *Mariners Weather Log, Vol. 49, No. 1*, *April 2005.*

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5. Tropical Cyclone Reports, 2014, National Hurricane Center, http://www.nhc.noaa.gov/data/tcr/index.php?season=2014&basin=atl

6. Sienkiewicz, Joe and Chesneau, Lee, "Mariner's Guide to the 500-Millibar Chart", *Mariners Weather Log, December 2008.*

7. http://www.mashable.com/2014/11/10/typhoon-nuri-bering-bomb-storm/ ⚓

# Tropical Atlantic and Tropical East Pacific Areas

## January through April 2015

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## Tropical North Atlantic Ocean including the Caribbean Sea and the Gulf of Mexico

The TAFB Atlantic High Seas area of responsibility (AOR) extends from 7°N to 31°N west of 35°W, including the Caribbean Sea and Gulf of Mexico. Fifty-Three (53) gale warnings were issued for this area from January through April 2015; with only One (1) storm force wind warning and zero hurricane force wind warnings issued during the period. The Fifty-Four (54) warnings issued in the Atlantic basin was the highest number of warnings ever issued by TAFB during a winter season, breaking the previous record number of Forty-Four (44) in 2014. The number of warnings was up from the January through April five-year average of Twenty-Eight (28) warnings. Of the Fifty-Four (54) warnings issued, ten of these were located in the Gulf of Mexico, Fourteen (14) of these were located in the Atlantic Ocean, and Thirty (30) were located in the Caribbean Sea.

**Table A-A. Non-tropical warnings issued for the Atlantic Ocean between 01 January 2015 and 30 April 2015. Storm events are shaded yellow and the duration of the storm warning is in parentheses.**

| ONSET | REGION | PEAK WIND (kts) | GALE DURATION (STORM) | FORCING |
|---|---|---|---|---|
| 01 Jan 0600 UTC | Caribbean | 40 | 156 h | Pressure Gradient |
| 04 Jan 1800 UTC | Gulf of Mexico | 40 | 42 h | Cold Front |
| 08 Jan 0600 UTC | Gulf of Mexico | 35 | 24 h | Cold Front |
| 08 Jan 0600 UTC | SW North Atlantic | 35 | 18 h | Cold Front |
| 09 Jan 0000 UTC | Caribbean | 35 | 36 h | Pressure Gradient |
| 11 Jan 0600 UTC | Caribbean | 35 | 12 h | Pressure Gradient |
| 12 Jan 0000 UTC | Caribbean | 35 | 18 h | Pressure Gradient |
| 15 Jan 1800 UTC | Gulf of Mexico | 35 | 30 h | Pressure Gradient |
| 23 Jan 0600 UTC | Gulf of Mexico | 35 | 24 h | Cold Front |
| 24 Jan 0600 UTC | SW North Atlantic | 35 | 30 h | Cold Front |
| 26 Jan 1800 UTC | SW North Atlantic | 40 | 42 h | Cold Front |
| 31 Jan 0000 UTC | SW North Atlantic | 35 | 06 h | Cold Front |
| 01 Feb 0000 UTC | SW North Atlantic | 35 | 24 h | Cold Front |
| 02 Feb 0600 UTC | Caribbean | 35 | 60 h | Pressure Gradient |
| 02 Feb 1800 UTC | SW North Atlantic | 35 | 24 h | Cold Front |
| 02 Feb 1800 UTC | Gulf of Mexico | 35 | 18 h | Cold Front |
| 04 Feb 1200 UTC | Gulf of Mexico | 35 | 12 h | Surface Trough |
| 05 Feb 0000 UTC | Caribbean | 35 | 18 h | Pressure Gradient |

| ONSET | REGION | PEAK WIND (kts) | GALE DURATION (STORM) | FORCING |
|---|---|---|---|---|
| 05 Feb 1200 UTC | SW North Atlantic | 35 | 36 h | Cold Front |
| 11 Feb 0000 UTC | SW North Atlantic | 45 | 48 h | Cold Front |
| 01 Jan 0600 UTC | Caribbean | 40 | 156 h | Pressure Gradient |
| 04 Jan 1800 UTC | Gulf of Mexico | 40 | 42 h | Cold Front |
| 08 Jan 0600 UTC | Gulf of Mexico | 35 | 24 h | Cold Front |
| 08 Jan 0600 UTC | SW North Atlantic | 35 | 18 h | Cold Front |
| 09 Jan 0000 UTC | Caribbean | 35 | 36 h | Pressure Gradient |
| 11 Jan 0600 UTC | Caribbean | 35 | 12 h | Pressure Gradient |
| 12 Jan 0000 UTC | Caribbean | 35 | 18 h | Pressure Gradient |
| 15 Jan 1800 UTC | Gulf of Mexico | 35 | 30 h | Pressure Gradient |
| 23 Jan 0600 UTC | Gulf of Mexico | 35 | 24 h | Cold Front |
| 24 Jan 0600 UTC | SW North Atlantic | 35 | 30 h | Cold Front |
| 26 Jan 1800 UTC | SW North Atlantic | 40 | 42 h | Cold Front |
| 31 Jan 0000 UTC | SW North Atlantic | 35 | 06 h | Cold Front |
| 01 Feb 0000 UTC | SW North Atlantic | 35 | 24 h | Cold Front |
| 02 Feb 0600 UTC | Caribbean | 35 | 60 h | Pressure Gradient |
| 02 Feb 1800 UTC | SW North Atlantic | 35 | 24 h | Cold Front |
| 02 Feb 1800 UTC | Gulf of Mexico | 35 | 18 h | Cold Front |
| 04 Feb 1200 UTC | Gulf of Mexico | 35 | 12 h | Surface Trough |
| 05 Feb 0000 UTC | Caribbean | 35 | 18 h | Pressure Gradient |
| 05 Feb 1200 UTC | SW North Atlantic | 35 | 36 h | Cold Front |
| 11 Feb 0000 UTC | SW North Atlantic | 45 | 48 h | Cold Front |
| 15 Feb 0600 UTC | SW North Atlantic | 35 | 42 h | Cold Front |
| 15 Feb 0600 UTC | Caribbean | 35 | 12 h | Pressure Gradient |
| 16 Feb 0600 UTC | Caribbean | 35 | 12 h | Pressure Gradient |
| 17 Feb 0600 UTC | SW North Atlantic | 35 | 18 h | Cold Front |
| 17 Feb 0600 UTC | Caribbean | 35 | 12 h | Pressure Gradient |
| 18 Feb 0600 UTC | SW North Atlantic | 35 | 18 h | Cold Front |
| 18 Feb 0600 UTC | Gulf of Mexico | 35 | 12 h | Cold Front |
| 19 Feb 0600 UTC | SW North Atlantic | 35 | 30 h | Cold Front |
| 19 Feb 1800 UTC | Caribbean | 35 | 12 h | Pressure Gradient |
| 21 Feb 0600 UTC | Caribbean | 35 | 12 h | Pressure Gradient |

| ONSET | REGION | PEAK WIND (kts) | GALE DURATION (STORM) | FORCING |
|---|---|---|---|---|
| 22 Feb 0000 UTC | Caribbean | 35 | 18 h | Pressure Gradient |
| 23 Feb 0000 UTC | Caribbean | 35 | 18 h | Pressure Gradient |
| 24 Feb 0600 UTC | Caribbean | 35 | 12 h | Pressure Gradient |
| 25 Feb 0600 UTC | Caribbean | 35 | 12 h | Pressure Gradient |
| 26 Feb 0600 UTC | Caribbean | 35 | 18 h | Pressure Gradient |
| 27 Feb 0600 UTC | Caribbean | 35 | 12 h | Pressure Gradient |
| 28 Feb 0600 UTC | Caribbean | 35 | 12 h | Pressure Gradient |
| 29 Feb 0000 UTC | Caribbean | 40 | 60 h | Pressure Gradient |
| 02 Mar 1800 UTC | Caribbean | 35 | 18 h | Pressure Gradient |
| 04 Mar 0000 UTC | Caribbean | 35 | 18 h | Pressure Gradient |
| 05 Mar 0000 UTC | Caribbean | 40 | 114 h | Pressure Gradient |
| 05 Mar 0600 UTC | Gulf of Mexico | 50 | 48 h (12 h) | Cold Front |
| 07 Mar 1200 UTC | Gulf of Mexico | 35 | 06 h | Cold Front |
| 10 Mar 0000 UTC | Caribbean | 40 | 18 h | Pressure Gradient |
| 11 Mar 0000 UTC | Caribbean | 40 | 42 h | Pressure Gradient |
| 13 Mar 0000 UTC | Caribbean | 35 | 18 h | Pressure Gradient |
| 14 Mar 0000 UTC | Caribbean | 35 | 18 h | Pressure Gradient |
| 15 Mar 0000 UTC | Caribbean | 35 | 18 h | Pressure Gradient |
| 27 Mar 1200 UTC | Gulf of Mexico | 40 | 12 h | Cold Front |
| 07 Apr 0600 UTC | Caribbean | 35 | 12 h | Pressure Gradient |
| 08 Apr 0600 UTC | Caribbean | 35 | 12 h | Pressure Gradient |
| 10 Apr 0600 UTC | Caribbean | 35 | 12 h | Pressure Gradient |
| 27 Apr 0000 UTC | SW North Atlantic | 35 | 12 h | Cold Front |

**Table A-A** details the warnings issued in the TAFB Atlantic High Seas AOR from January through April 2015. The first longer duration gale of 2015 began on 1 January and occurred in the Caribbean Sea as a strong pressure gradient set up between a relatively strong high pressure system anchored across the Southwest North Atlantic Ocean and lower pressure across the Northwestern South American continent. Gale force conditions persisted for six and a half days before a strong frontal trough weakened the Southwest North Atlantic ridging and relaxed the pressure gradient across the Caribbean Sea. **Figure 1** shows a MetOp Advanced SCATerometer (ASCAT-B) pass from 04 January. Note the blue wind barbs indicating 34-40 kts winds in the Southwestern Caribbean Sea that reached the surface. Warnings were discontinued in the Caribbean by 1800 UTC 07 January.

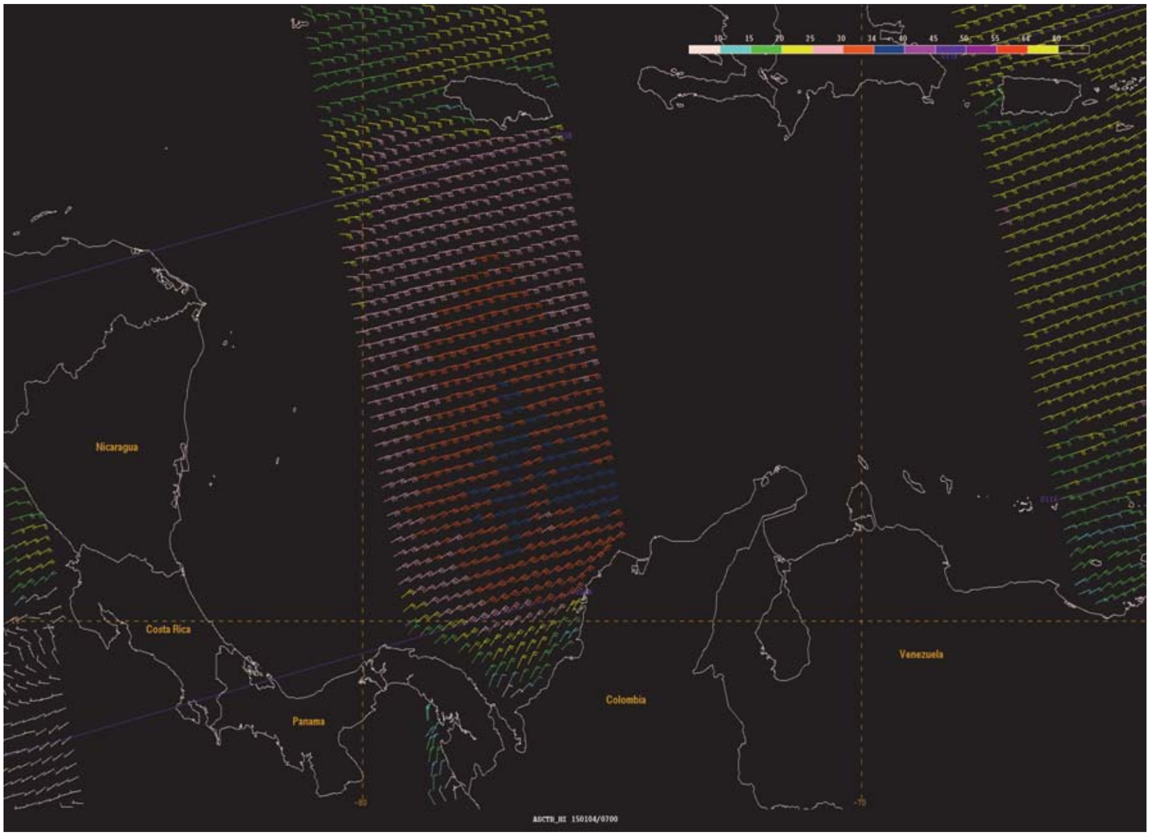



**Figure 1.**
**A scatterometer pass from the MetOp Advanced SCATerometer (ASCAT-B) valid around 0256 UTC 04 January. Note the dark blue wind barbs in the Southwestern Caribbean Sea indicating gale force winds between 34 and 40 kts.**

**Figure 2** shows another MetOp Advanced SCATerometer (ASCAT-B) pass several hours later on 05 January indicating the gale area was not as widespread, however still occurring in a condensed area within 120 nmi off the coast of Colombia.

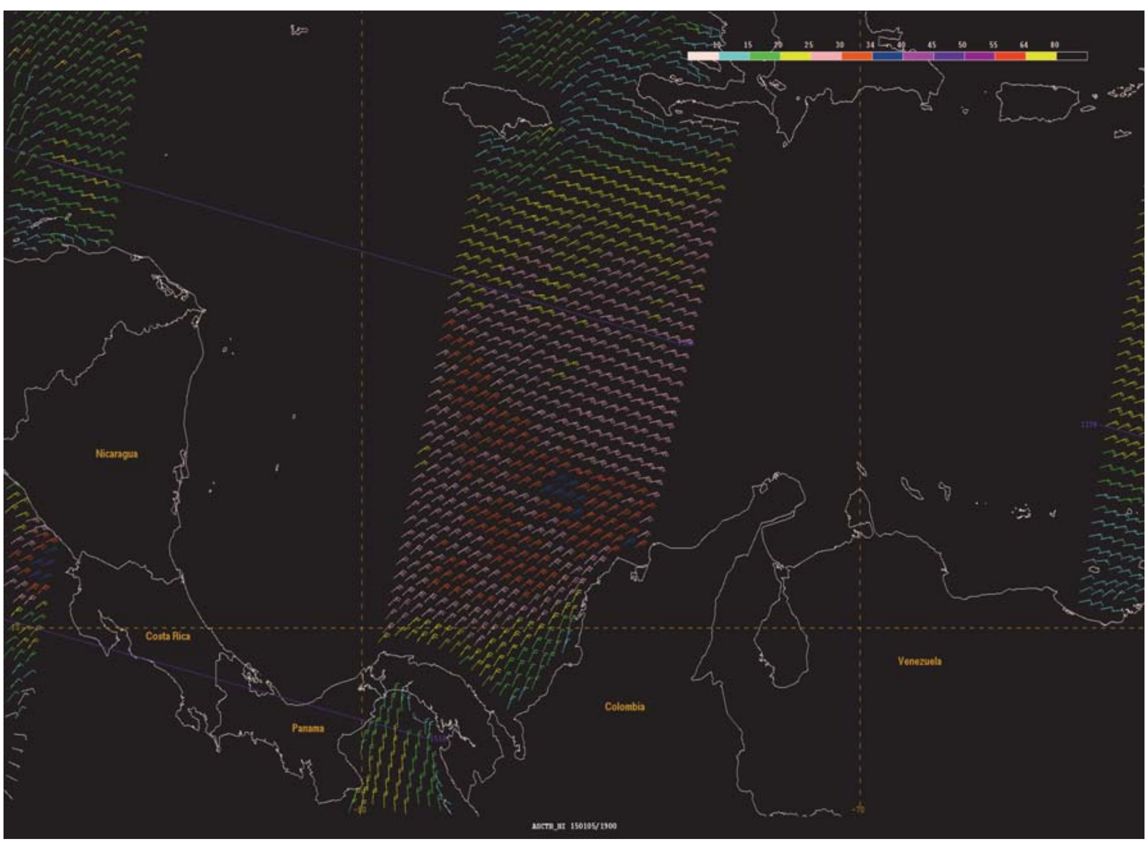



**Figure 2.**
**A scatterometer pass from the MetOp Advanced SCATerometer (ASCAT-B) valid around 1508 UTC 05 January. Note the dark blue wind barbs in the Southwestern Caribbean Sea indicating gale force winds between 34 and 40 kts.**

During this gale force wind event, several ships reported gale force conditions and these are summarized in **Table A-B**.

**Table A-B. Ship observations during the gale warning period beginning 01 January 0600 UTC and ending 07 January 1800 UTC.**

| SHIP | CALL SIGN | WIND SPEED (kts) | LOCATION | DATE / TIME |
|---|---|---|---|---|
| Johann Smidt | DEFY | 40 | 13.5N 72.9W | 01 Jan 1200 UTC |
| | | 38 | 14.1N 75.0W | 02 Jan 0600 UTC |
| | | 40 | 13.4N 78.5W | 03 Jan 0400 UTC |
| Island Princess | ZCDG4 | 40 | 10.9N 75.5W | 05 Jan 0400 UTC |
| | | 40 | 11.4N 74.5W | 05 Jan 1000 UTC |
| | | 37 | 12.1N 72.9W | 05 Jan 1700 UTC |
| Coral Princess | ZCDF4 | 38 | 13.9N 71.2W | 06 Jan 0500 UTC |
| Celebrity Eclipse | 9HXC9 | 41 | 16.1N 72.9W | 06 Jan 1900 UTC |
| Prinsendam | PBGH | 39 | 12.7N 81.1W | 07 Jan 0200 UTC |
| | | 40 | 11.4N 80.2W | 07 Jan 0800 UTC |
| Zuiderdam | PBIG | 36 | 11.3N 75.2W | 07 Jan 1700 UTC |

The strongest Gulf of Mexico warning was the only storm force warning that occurred across the basin in the four month period. This storm force warning began at 0600 UTC 05 March and persisted for 48 hours. Of that 48 hours, only 12 hours of storm force conditions were forecast between 0000 UTC 06 March and 1200 UTC 06 March. A strong surface pressure gradient materialized along the East-Central coast of Mexico and the Southwestern Gulf of Mexico waters after the passage of a cold front. While storm force conditions were limited to a relatively small area across the Southwestern Gulf of Mexico, **Table A-C** summarizes ships that reported winds of gale force or greater west of the cold front.

**Table A-C. Ship observations during the storm warning period beginning 05 March 0600 UTC and ending 07 March 0600 UTC.**

| SHIP | CALL SIGN | WIND SPEED (kts) | LOCATION | DATE / TIME |
|---|---|---|---|---|
| Eagle Baltimore | 9VHG | 36 | 29.2N 93.1W | 05 Mar 1000 UTC |
| Overseas Texas City | WHED | 35 | 29.3N 93.2W | 05 Mar 1900 UTC |
| Meteor | DBBH | 41 | 20.0N 94.1W | 06 Mar 0000 UTC |
| | | 35 | 20.2N 93.6W | 06 Mar 0300 UTC |
| Norwegian Jewel | C6TX6 | 45 | 25.3N 88.7W | 06 Mar 0800 UTC |
| | | 40 | 26.1N 89.6W | 06 Mar 1200 UTC |
| Carnival Freedom | 3EBL5 | 35 | 24.1N 88.0W | 06 Mar 1200 UTC |
| BLS Ability | ELXX8 | 36 | 29.1N 92.7W | 06 Mar 1000 UTC |

Although no storm force observations were reported, **Figure 3** shows a portion of the area of gale force and storm force wind barbs offshore of Mexico south of 25N and west of 95W.

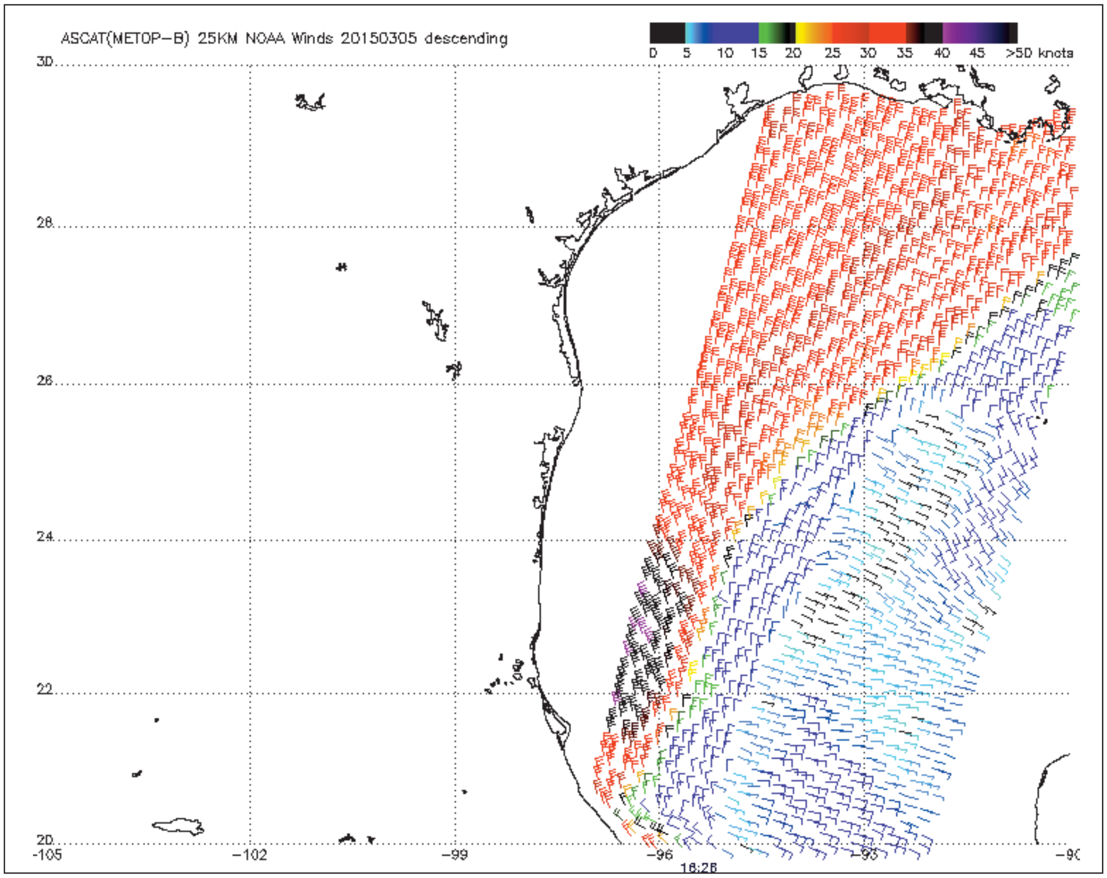



**Figure 3. A scatterometer pass from the MetOp Advanced SCATerometer (ASCAT-B) valid around 1628 UTC 05 March. Note the brown and pink wind barbs in the southwestern Gulf of Mexico indicating gale to storm force winds.**

# Eastern North Pacific Ocean South of 30°N and East of 140°W

There were Twenty-Seven (27) gale or stronger events in the North Pacific east of 140W between 30N and the Equator from 01 January 2015 to 30 April 2015 summarized in **Table P-A**. Of these events, Twenty (20) occurred over the Gulf of Tehuantepec, Five (5) over the Gulf of Papagayo, and Two (2) over the open waters of the Pacific north of 22N. Three (3) of the events over the Gulf of Tehuantepec reached Storm Force of 50 kts or greater with ten events over this portion of the Pacific persisting 36 hours or longer at gale force. Ship observations of these gale-force or greater events are shown in **Table P-B**. Ship reports received through the Voluntary Observing Ship (VOS) program are a vital source of data in verifying gale and storm events.

**Table P-A. Non-tropical warnings issued for the Eastern North Pacific Ocean between 01 January 2015 and 30 April 2015. Storm events are shaded yellow and the duration of the storm warning is in parentheses.**

| ONSET | REGION | PEAK WIND (kts) | GALE DURATION (STORM) | FORCING |
|---|---|---|---|---|
| 01 Jan 0600 UTC | Gulf of Tehuantepec | 35 | 12 h | Gap |
| 04 Jan 1800 UTC | Gulf of Tehuantepec | 50 | 96 h (36 h) | Gap |
| 05 Jan 1800 UTC | Gulf of Papagayo | 35 | 54 h | Gap |

| ONSET | REGION | PEAK WIND (kts) | GALE DURATION (STORM) | FORCING |
|---|---|---|---|---|
| 10 Jan 0600 UTC | Gulf of Tehuantepec | 35 | 48 h | Gap |
| 13 Jan 0000 UTC | Gulf of Tehuantepec | 35 | 60 h | Gap |
| 16 Jan 0000 UTC | Gulf of Tehuantepec | 40 | 60 h | Gap |
| 18 Jan 1800 UTC | Gulf of Tehuantepec | 40 | 42 h | Gap |
| 24 Jan 0600 UTC | Gulf of Tehuantepec | 45 | 156 h | Gap |
| 28 Jan 1200 UTC | Gulf of Papagayo | 35 | 36 h | Gap |
| 03 Feb 0000 UTC | Gulf of Tehuantepec | 35 | 18 h | Gap |
| 04 Feb 0600 UTC | Gulf of Papagayo | 35 | 18 h | Gap |
| 05 Feb 1200 UTC | Gulf of Tehuantepec | 50 | 60 h (06 h) | Gap |
| 06 Feb 1800 UTC | Eastern Pacific 22N | 35 | 06 h | Front |
| 08 Feb 0000 UTC | Eastern Pacific 22N | 35 | 18 h | Front |
| 10 Feb 1200 UTC | Gulf of Tehuantepec | 35 | 18 h | Gap |
| 13 Feb 0000 UTC | Gulf of Tehuantepec | 40 | 66 h | Gap |
| 14 Feb 0600 UTC | Gulf of Papagayo | 35 | 36 h | Gap |
| 18 Feb 0600 UTC | Gulf of Tehuantepec | 40 | 72 h | Gap |
| 24 Feb 0600 UTC | Gulf of Tehuantepec | 35 | 36 h | Gap |
| 28 Feb 0000 UTC | Gulf of Tehuantepec | 35 | 12 h | Gap |
| 06 Mar 0000 UTC | Gulf of Tehuantepec | 50 | 72 h (18 h) | Gap |
| 07 Mar 0600 UTC | Gulf of Papagayo | 35 | 36 h | Gap |
| 12 Mar 0600 UTC | Gulf of Tehuantepec | 35 | 30 h | Gap |
| 16 Mar 0000 UTC | Gulf of Tehuantepec | 35 | 24 h | Gap |
| 28 Mar 0000 UTC | Gulf of Tehuantepec | 40 | 42 h | Gap |
| 05 Apr 0600 UTC | Gulf of Tehuantepec | 35 | 12 h | Gap |
| 29 Apr 1800 UTC | Gulf of Tehuantepec | 35 | 18 h | Gap |

**Table P-B. Ships reporting gale force winds or greater over the Eastern North Pacific Ocean between 01 January 2015 and 30 April 2015.**

| SHIP | CALL SIGN | WIND SPEED (kts) | LOCATION | | DATE / TIME |
|---|---|---|---|---|---|
| Antwerpen Express | DGAF | 40 | 13.7N 95.9W | Gulf of Tehuantepec | 05 Jan 0600 UTC |
| Norwegian Star | C6FR3 | 40 | 15.3N 94.7W | Gulf of Tehuantepec | 10 Jan 0400 UTC |
| Norwegian Star | C6FR3 | 40 | 15.4N 94.9W | Gulf of Tehuantepec | 10 Jan 0300 UTC |
| Norwegian Star | C6FR3 | 35 | 15.1N 94.0W | Gulf of Tehuantepec | 10 Jan 0600 UTC |
| Norwegian Star | C6FR3 | 36 | 15.2N 94.2W | Gulf of Tehuantepec | 10 Jan 0700 UTC |
| Liberty Promise | WWMZ | 45 | 13.8N 95.7W | Gulf of Tehuantepec | 24 Jan 1200 UTC |

| SHIP | CALL SIGN | WIND SPEED (kts) | LOCATION | | DATE / TIME |
|---|---|---|---|---|---|
| Grasmere Maersk | ZQAY4 | 36 | 14.3N 96.4W | Gulf of Tehuantepec | 27 Jan 0600 UTC |
| Fidelio | SLKR | 40 | 14.4N 95.4W | Gulf of Tehuantepec | 27 Jan 0600 UTC |
| Stena Companion | ZCDI4 | 37 | 15.6N 95.1W | Gulf of Tehuantepec | 27 Jan 0100 UTC |
| Stena Companion | ZCDI4 | 42 | 15.7N 94.9W | Gulf of Tehuantepec | 27 Jan 1700 UTC |
| Norwegian Star | C6FR3 | 43 | 15.2N 94.3W | Gulf of Tehuantepec | 28 Jan 0100 UTC |
| Norwegian Star | C6FR3 | 52 | 15.5N 95.4W | Gulf of Tehuantepec | 28 Jan 1000 UTC |
| Island Princess | ZCDG4 | 45 | 11.6N 87.2W | Gulf of Papagayo | 29 Jan 0400 UTC |
| Stena Companion | ZCDI4 | 37 | 15.5N 95.5W | Gulf of Tehuantepec | 30 Jan 1200 UTC |
| Island Princess | ZCDG4 | 45 | 15.5N 94.5W | Gulf of Tehuantepec | 30 Jan 0500 UTC |
| Horizon Pacific | WSRL | 42 | 29.4N 135.2W | Eastern Pacific 22N | 08 Feb 1200 UTC |
| Veendam | PHEO | 40 | 14.9N 94.7W | Gulf of Tehuantepec | 13 Feb 0300 UTC |
| Veendam | PHEO | 45 | 10.6N 86.3W | Gulf of Papagayo | 15 Feb 0700 UTC |
| Veendam | PHEO | 42 | 10.4N 86.2W | Gulf of Papagayo | 15 Feb 0800 UTC |
| Veendam | PHEO | 45 | 09.9N 85.9W | Gulf of Papagayo | 15 Feb 1000 UTC |
| Santa Catarina | A8YJ9 | 45 | 13.6N 94.8W | Gulf of Tehuantepec | 06 Mar 1300 UTC |

## Gulf of Tehuantepec Gale and Storm Warnings

The Gulf of Tehuantepec wind events are usually driven by mid-latitude cold frontal passages through the narrow Chivela Pass in the Isthmus of Tehuantepec between the Sierra Madre de Oaxaca Mountains on the west and the Sierra Madre de Chiapas Mountains on the east. The Northerly winds from the Southwest Gulf of Mexico funnel through the pass delivering stronger winds into the Gulf of Tehuantepec. The Thirty-Four (34) events for the Gulf of Tehuantepec this season (2014-2015) tied the record that was set just last year (2013-2014 season). However, the 936 hours of duration of gale force or higher warnings in the January through April 2015 period for the Gulf of Tehuantepec were nearly 50% greater than the 627 hours during the same period in 2014.

The longest duration storm event that occurred during the January to April 2015 time period began January 4 with storm force winds lasting from early morning January 5 through the early afternoon of January 6 (a total of 36 hours) , and gale-force winds persisting until January 8.

Strong high pressure over Texas (**Figure 4**) and northeast Mexico behind a frontal system over the Gulf of Mexico was forcing wind through the Chivela Pass and setting up this storm/gale event. During this event, the ship **ANTWERPEN EXPRESS** (DGAF) reported winds to 40 kts as it passed through the warned area at 0600 UTC 05 January 2015.

A scatterometer pass (**Figure 5**) captured the event with winds from 30 to 40 kts occurring north of 13.5N W of 93.5W, with a small area of winds to 45 kts near 15.5N 94.5W.

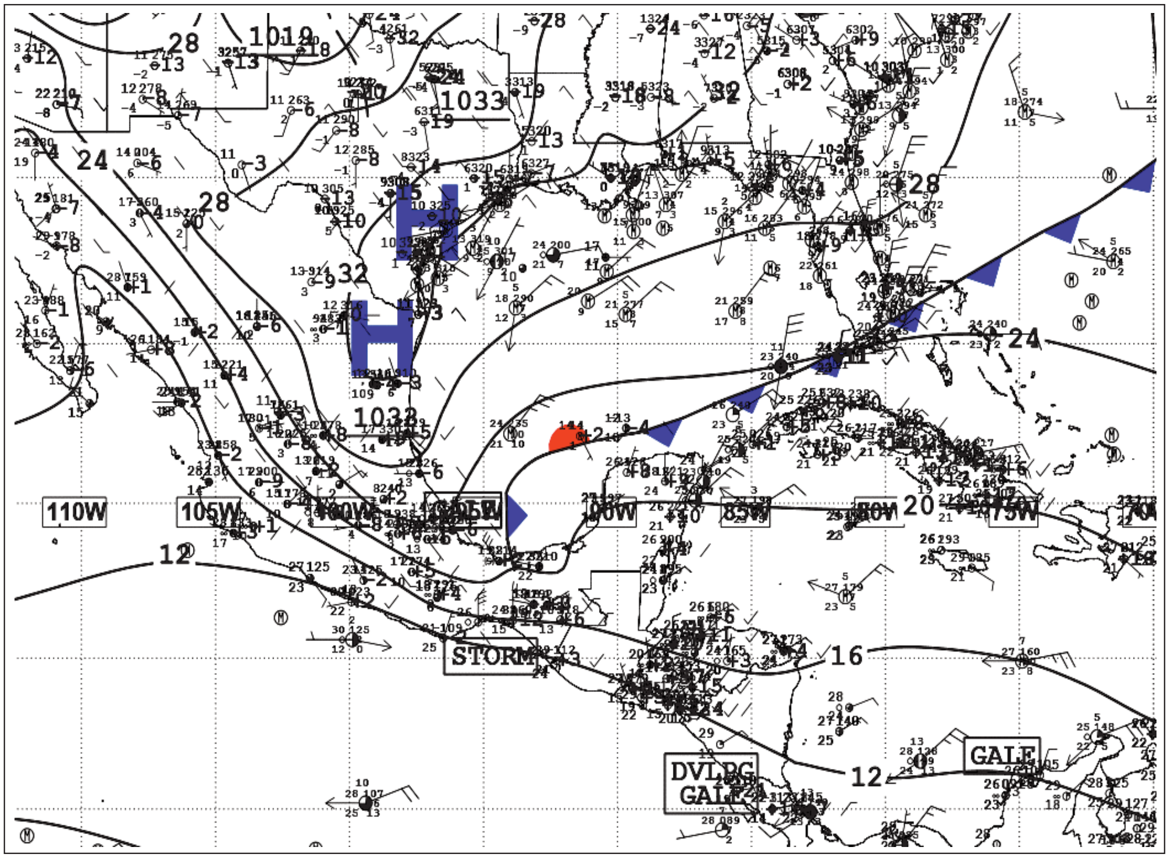



**Figure 4. National Weather Service Unified Surface Analysis (USA) Valid 0000 UTC 06 January 2015.**

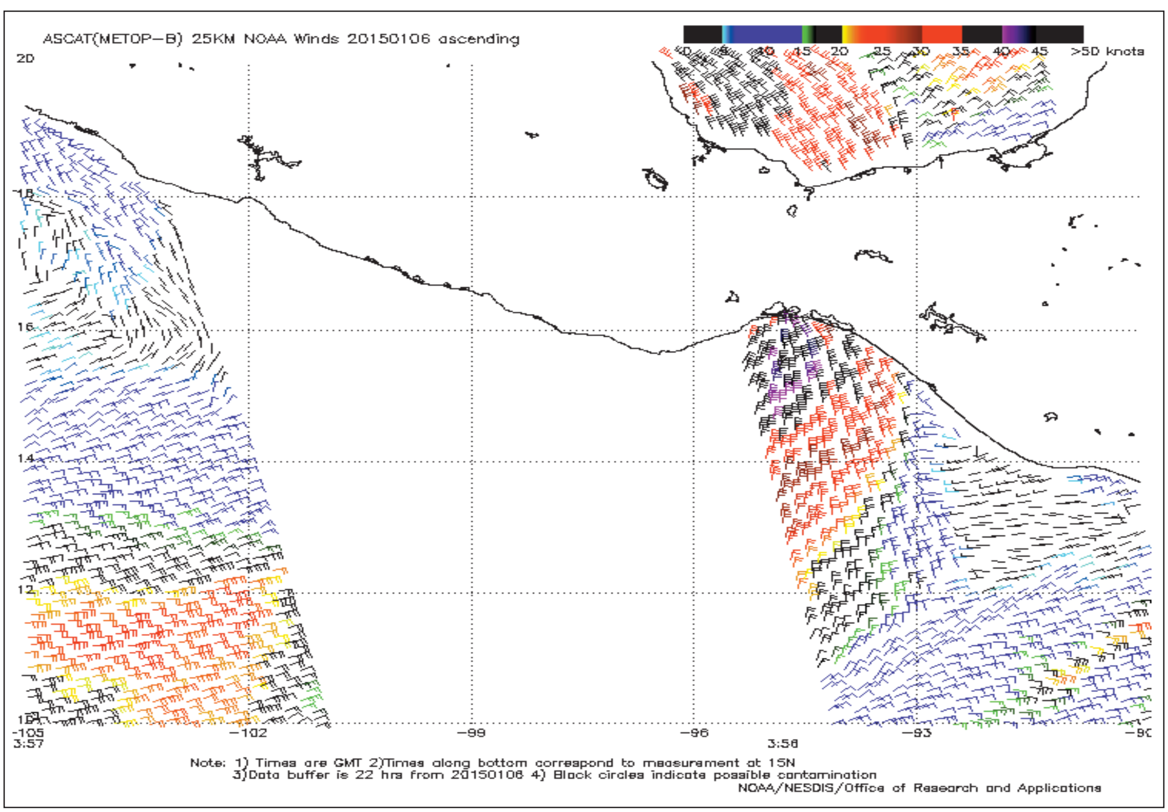



**Figure 5. European Advanced Scatterometer (ASCAT) pass valid at 0356 UTC 06 January 2015.**

# Late April to Early May Swell Event

A large area of swell developed over the Southern Hemisphere on 29 April, 2015, (**Figure 6**). On that day, 10 ft seas spanned from a line 10S 130W to 20S 130W east to 90W.

Such swell was likely generated by strong winds over the open waters of the South Pacific due to a tight pressure gradient between a stronger than normal early season mid-latitude 955 hPa low along near 50S 100W, and a 1025 hPa high centered near 35S 135W.

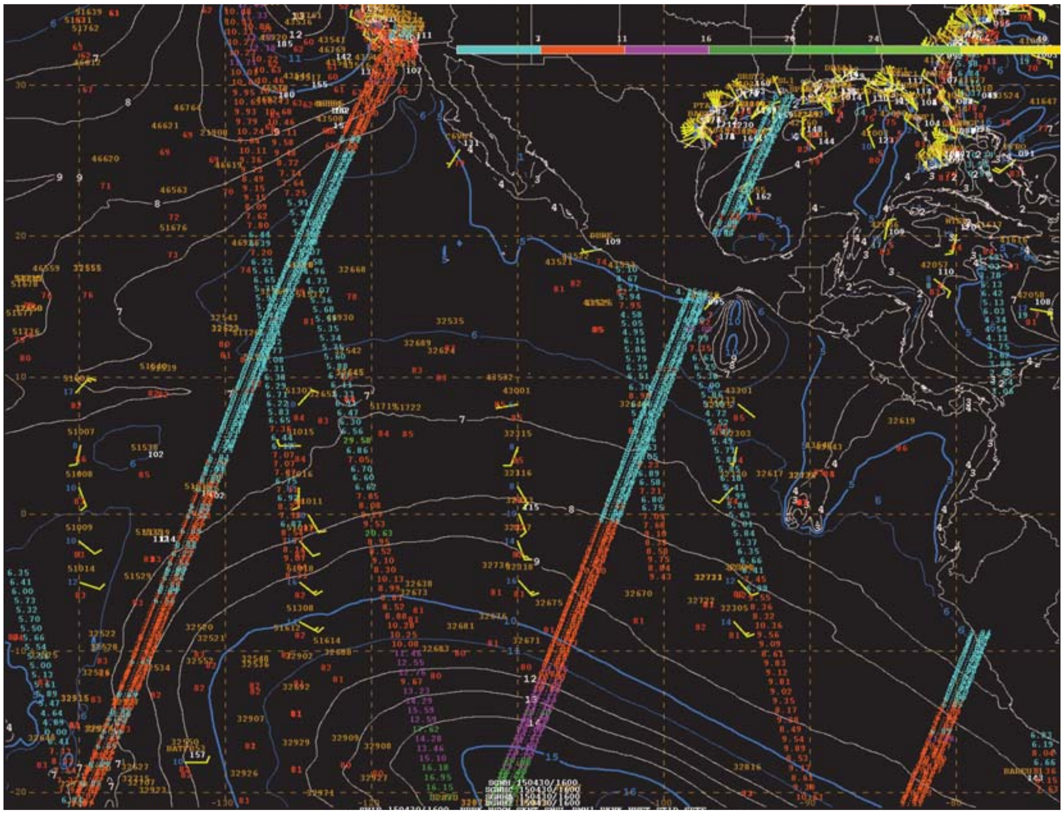


**Figure 6. Multi-grid NOAA Wavewatch III model wave height forecast and Satellite Altimeter data for 30 April, 2015.**

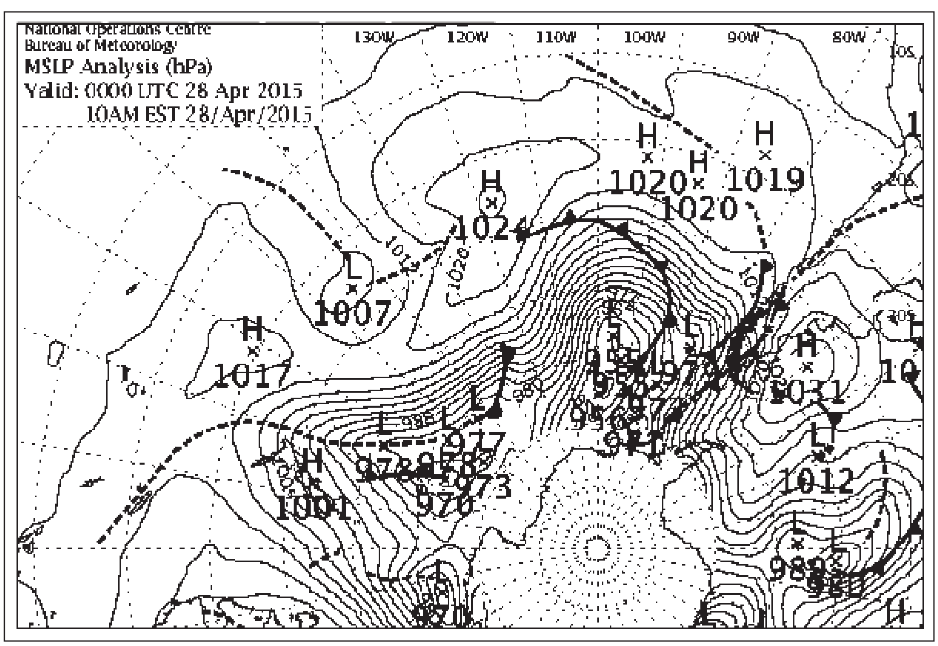



**Figure 7. Courtesy Australian Government Bureau of Meteorology Southern Hemisphere Analysis.**

This swell (**Figure 7)**, propagated north and east over the ensuing 48 hours, with 10-14 ft swell noted from altimeter passes between the Equator and 10N along 87W/88W on May 2. By May 3 (**Figure 8**) swell up to 13 feet was being measured by altimeter just offshore of the Southwestern coast of Mexico.

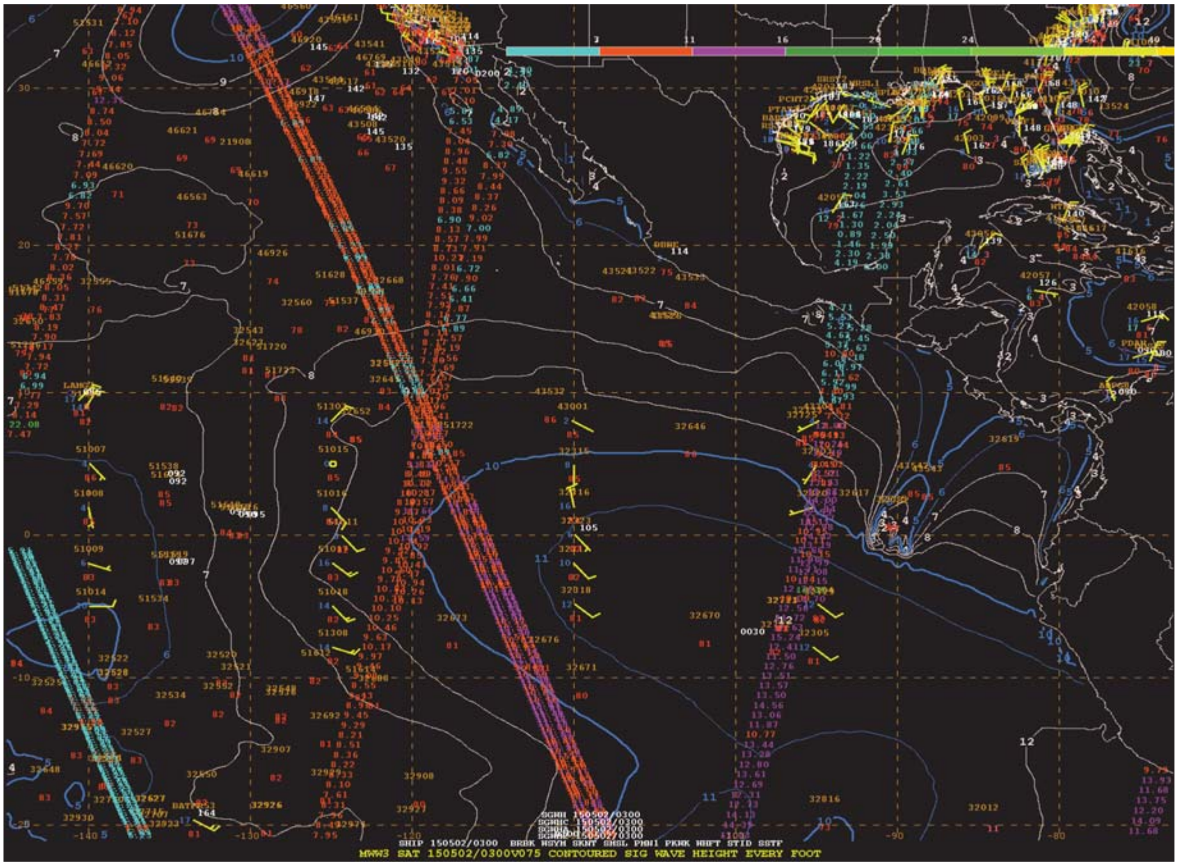



**Figure 8. Multi-grid NOAA Wavewatch III model wave height forecast and Satellite Altimeter data from 02 May, 2015.**

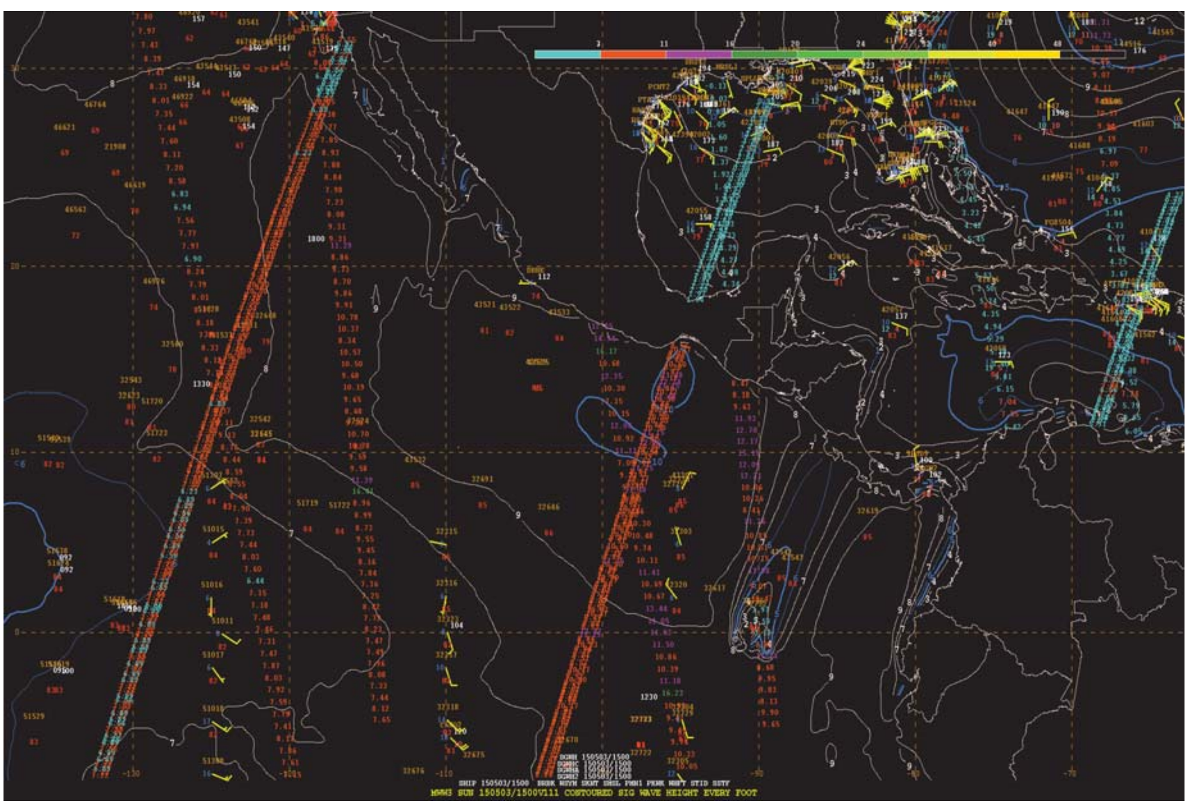



**Figure 9. Multi-grid NOAA Wavewatch III model wave height forecast and Satellite Altimeter data for 03 May, 2015.**

# Northern Waters Gale Warning

A strong cold front aided by a powerful southwesterly upper jet moved across the northern portions of our observing area late February 7 to early February 8. Strong southwesterly flow ahead of the front combined with thunderstorms to produce gale force winds up to 180 nmi east of the front north of 29N which extended from 30N 135W to 25N 140W. Scatterometer data indicated winds greater than 35 ktsnorth of 28.5N and E of 138W over the open waters of the Eastern Pacific. The ship **HORIZON PACIFIC** (WSRL) also reported winds to 42 kts near 29.4N 135.2W at 1200 UTC 08 Feb.

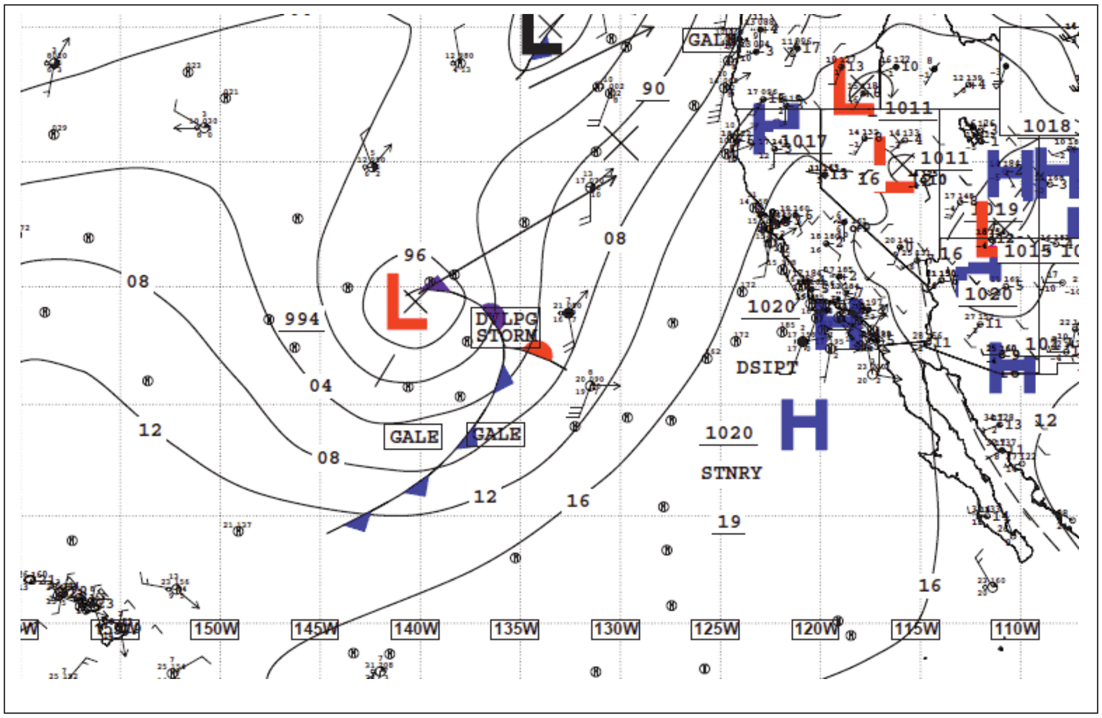



**Figure 10. National Weather Service Unified Surface Analysis (USA) Valid 0000 UTC 08 February 2015.**

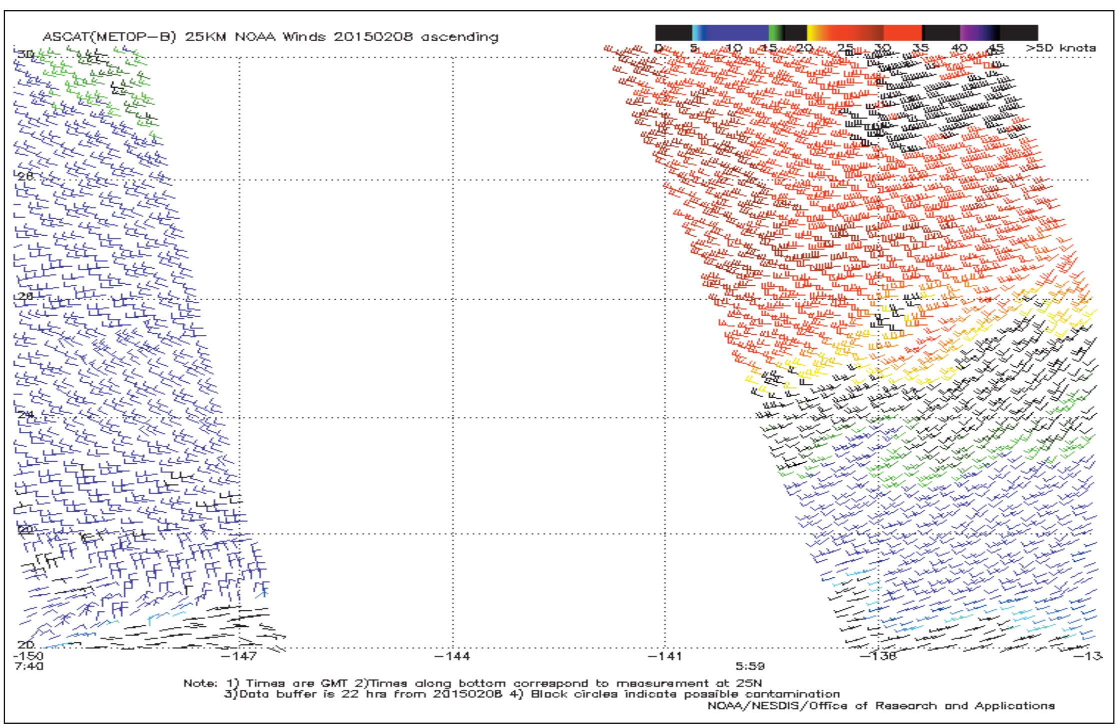



**Figure 11. European Advanced Scatterometer (ASCAT) pass Valid at 0559 UTC 08 February 2015.**

# Tropical Atlantic and Tropical East Pacific Areas

## May through August 2015

*Jorge Aguirre-Echevarria and Dan Mundell*
*Tropical Analysis and Forecast Branch*
*National Hurricane Center, Miami, Florida*
*NOAA National Centers for Environmental Prediction*

## Atlantic Ocean including the Caribbean Sea and the Gulf of Mexico

There were Twenty-Seven (27) non-tropical cyclone gale events that occurred between 1 May and 31 August 2015 in the area of high seas forecast responsibility (7ºN to 31ºN, west of 35ºW including the Caribbean Sea and Gulf of Mexico) of the National Hurricane Center's (NHC) Tropical Analysis and Forecast Branch (TAFB). The Caribbean Sea had Twenty-Three (23) of these events making it the busiest of the basins in recent years for this time period.

**Table 1. Non-tropical cyclone warnings issued for the subtropical and tropical Atlantic Ocean, including the Gulf of Mexico and Caribbean Sea between 1 May and 31 August 2015.**

| ONSET | REGION | PEAK WIND (kts) | GALE DURATION (STORM) | FORCING |
|---|---|---|---|---|
| 06 UTC 14 June | Gulf of Mexico | 35 | 06 h | Pressure Gradient |
| 12 UTC 14 June | Gulf of Mexico | 35 | 15 h | Low Pressure |
| 18 UTC 9 May | Caribbean | 40 | 40 h | Pressure Gradient |
| 00 UTC 12 May | Caribbean | 35 | 18 h | Pressure Gradient |
| 00 UTC 13 May | Caribbean | 35 | 36 h | Pressure Gradient |
| 06 UTC 14 June | Caribbean | 35 | 12 h | Pressure Gradient |
| 06 UTC 18 June | Caribbean | 35 | 66 h | Pressure Gradient |
| 06 UTC 22 June | Caribbean | 35 | 06 h | Pressure Gradient |
| 06 UTC 24 June | Caribbean | 40 | 78 h | Pressure Gradient |
| 00 UTC 28 June | Caribbean | 35 | 18 h | Pressure Gradient |
| 06 UTC 29 June | Caribbean | 35 | 12 h | Pressure Gradient |
| 00 UTC 30 June | Caribbean | 35 | 18 h | Pressure Gradient |
| 06 UTC 1 July | Caribbean | 35 | 12 h | Pressure Gradient |
| 06 UTC 3 July | Caribbean | 35 | 36 h | Pressure Gradient |
| 06 UTC 5 July | Caribbean | 35 | 36 h | Pressure Gradient |
| 06 UTC 25 July | Caribbean | 35 | 36 h | Pressure Gradient |
| 06 UTC 26 July | Caribbean | 35 | 12 h | Pressure Gradient |
| 06 UTC 28 July | Caribbean | 35 | 12 h | Pressure Gradient |
| 00 UTC 29 July | Caribbean | 40 | 18 h | Pressure Gradient |
| 00 UTC 30 July | Caribbean | 35 | 18 h | Pressure Gradient |
| 06 UTC 2 Aug | Caribbean | 35 | 30 h | Pressure Gradient |

| ONSET | REGION | PEAK WIND (kts) | GALE DURATION (STORM) | FORCING |
|---|---|---|---|---|
| 06 UTC 3 Aug | Caribbean | 35 | 12 h | Pressure Gradient |
| 06 UTC 4 Aug | Caribbean | 35 | 12 h | Pressure Gradient |
| 00 UTC 5 Aug | Caribbean | 35 | 18 h | Pressure Gradient |
| 00 UTC 6 Aug | Caribbean | 35 | 12 h | Pressure Gradient |
| 12 UTC 7 May | SW North Atlantic | 35 | 12 h | Low Pressure |
| 06 UTC 29 July | SW North Atlantic | 35 | 12 h | Low Pressure |
| 12 UTC 29 Aug | SW North Atlantic | 35 | 18 h | Tropical Wave |

## Pre-Bill Caribbean/Gulf of Mexico Gale Event

A gale event occurred over a portion of the Caribbean Sea in an area where these events are considered rare, especially during the summer months. A surface trough moving westward through the northwest Caribbean Sea on the morning of 14 June began to interact with Atlantic high pressure of 1020-1021 hPa located near the northwest Bahamas. (**Figure 1**) A tight isobaric spacing between the 1012 hPa and 1016 hPa isobars induced southeast gale force winds of 25 to 35 kts in the northwest Caribbean area from 19N to 22N between 85W and 87W that morning. The trough continued westward across the Yucatan Peninsula, and into the south central Gulf of Mexico during the afternoon of that same day as broad low pressure began to take shape over the northern Yucatan Peninsula. This shifted the gale force winds to along the northern Yucatan Peninsula and adjacent waters. (**Figure 2**) By 00 UTC 15 June, a surface low had developed along the trough over the eastern portion of the southwest Gulf of Mexico with east to southeast gale winds over portions of the south central Gulf of Mexico, including Yucatan Channel vicinity waters. (**Figure 3**) This low eventually developed into Tropical Storm Bill over the northwest Gulf of Mexico late on the evening of 14 June.

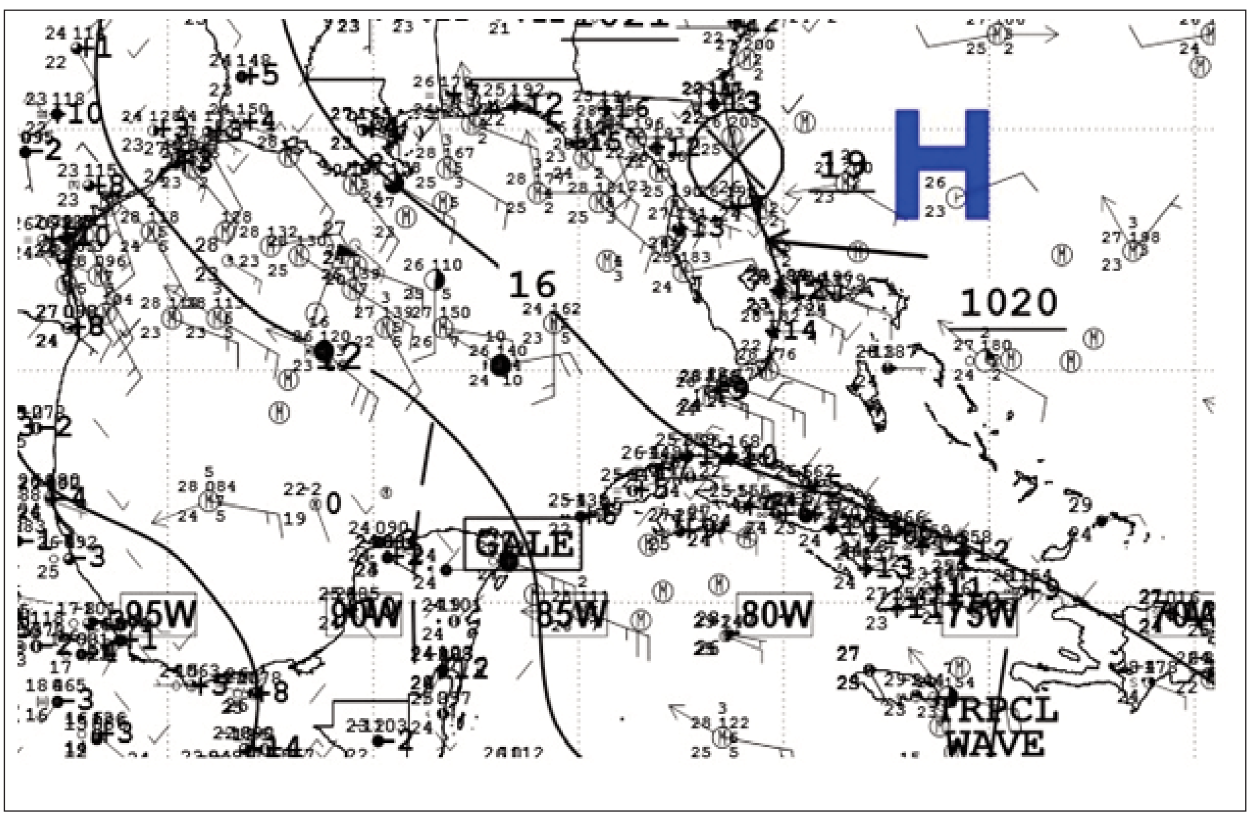



**Figure 1. National Weather Service Unified Surface Analysis (USA) map from 1200 UTC 14 June.**

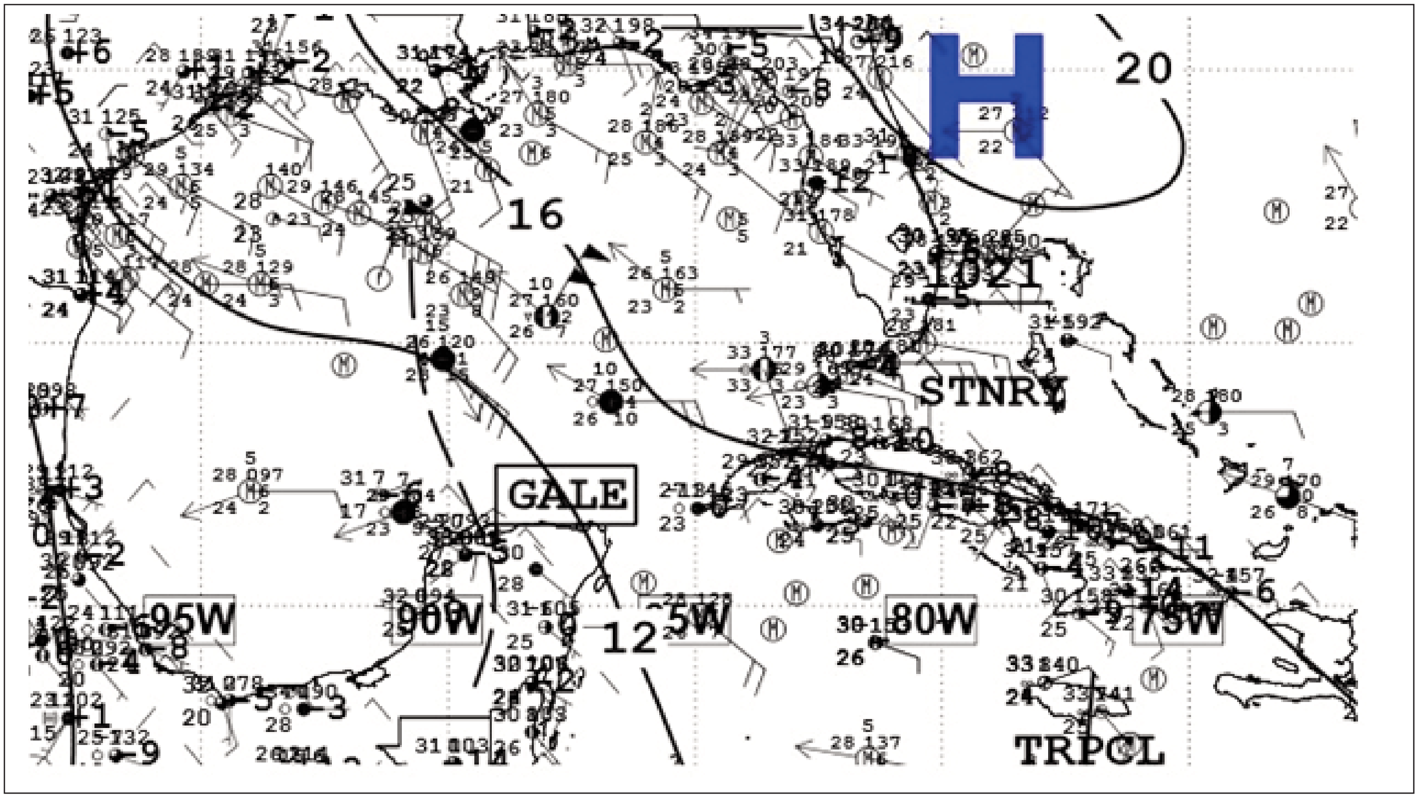



**Figure 2. National Weather Service Unified Surface Analysis (USA) from 1800 UTC 14 June.**

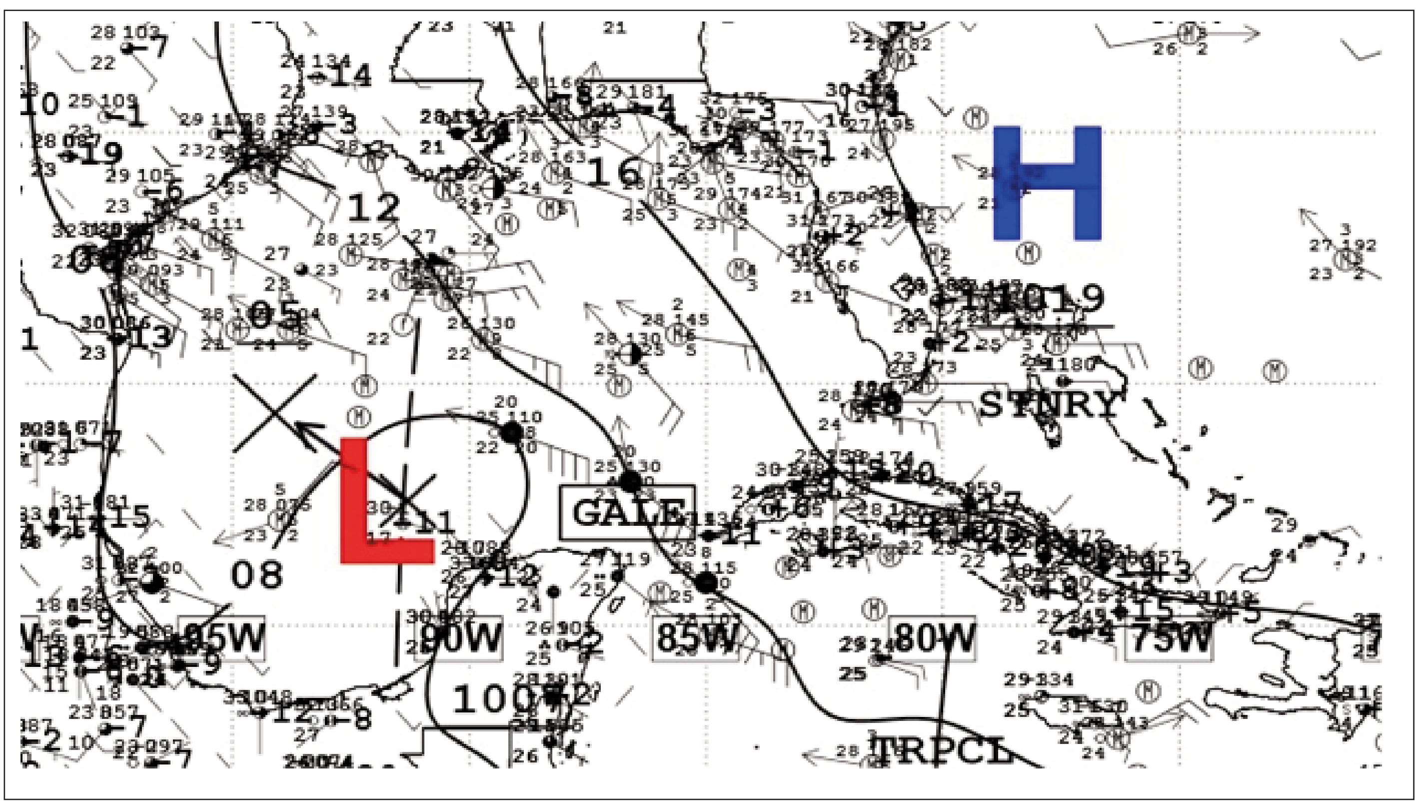



**Figure 3. National Weather Service Unified Surface Analysis (USA) from 0000 UTC 15 June.**

# Other Caribbean Gale Events

There were Twenty-Three (23) gale events in the Southwest Caribbean Sea between May 1 and August 31. The longest in duration occurred from 06 UTC 24 June to 12 UTC 27 June in the favorable climatological area of strongest trade winds found over a portion of the SW Caribbean Sea to the coasts of Colombia and northwestern Venezuela. This particular event was confined from 11N to 15N between 72W and 75W. The combination of a very tight pressure gradient between broad Atlantic high pressure ridging with axis roughly along 28N/29N, and low pressure across the Colombian basin along with the added reinforcement to the gradient due to passage of tropical waves initiated NE to E 30 to 40 kts winds with seas of 13 to 14 ft across that part of the SW Caribbean. (**Figure 4**)

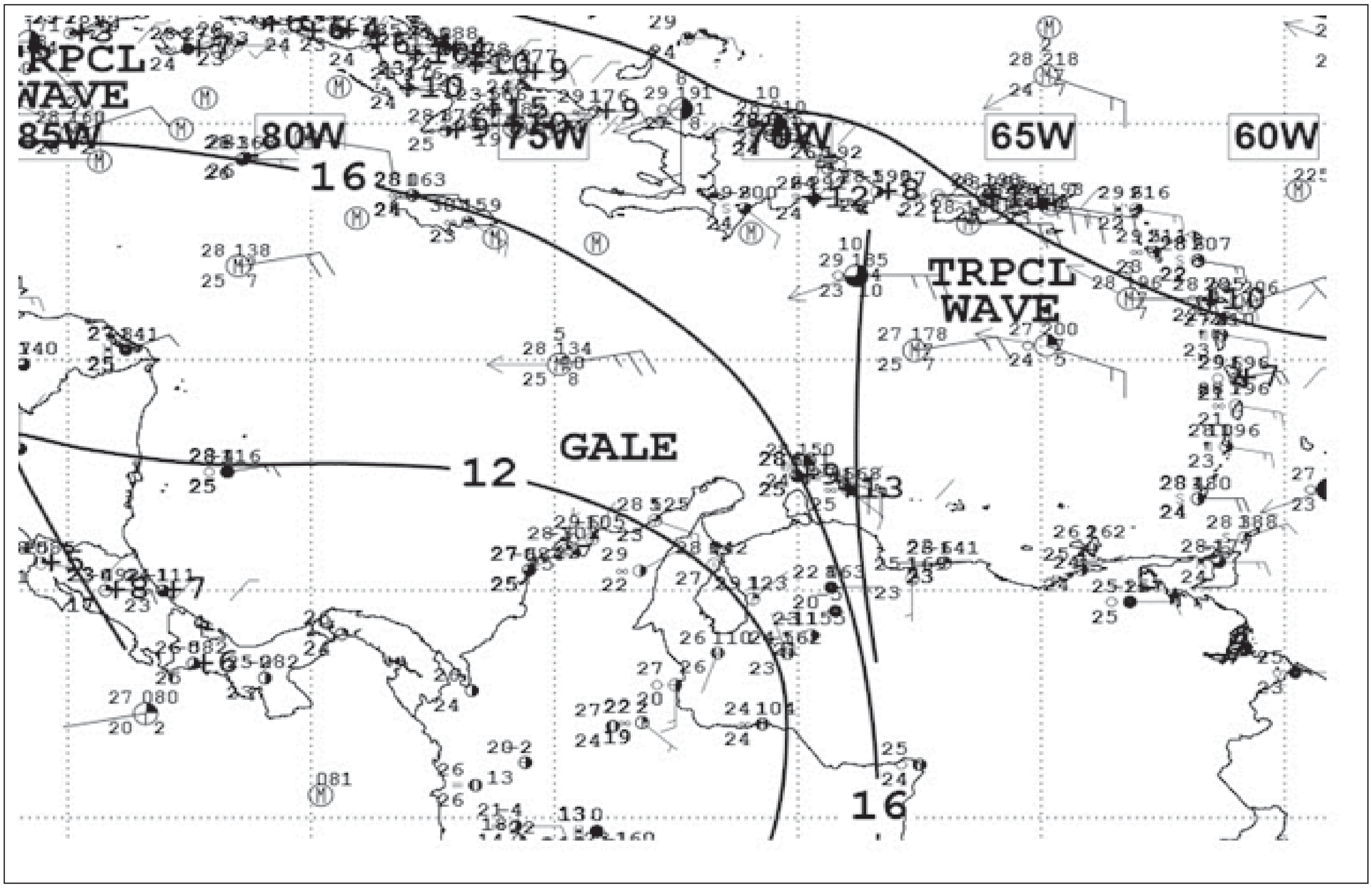



**Figure 4. National Weather Service Unified Surface Analysis (USA) from 1200 UTC 24 June.**

National Data Buoy Center (NDBC) Buoy 42058 at 15N78W recorded similar wave height values. (**Figure 5**). Observations from ship **STAR LIVORNO** (LAQM7) reported northeast winds of 35 kts at 00 UTC 25 July at location 19N68W and 36 kts at 12 UTC 25 July at location 17N67W (**Figure 6**). Further proof of the ongoing gale event was noted in a RapidScat pass from the morning of June 26 that clearly showed the gale force winds (**Figure 7**). On 27 June ship **MAERSK DAYTON** (DDSC2) reported 40 kts at 12 UTC near location 13N73W (**Figure 8**).

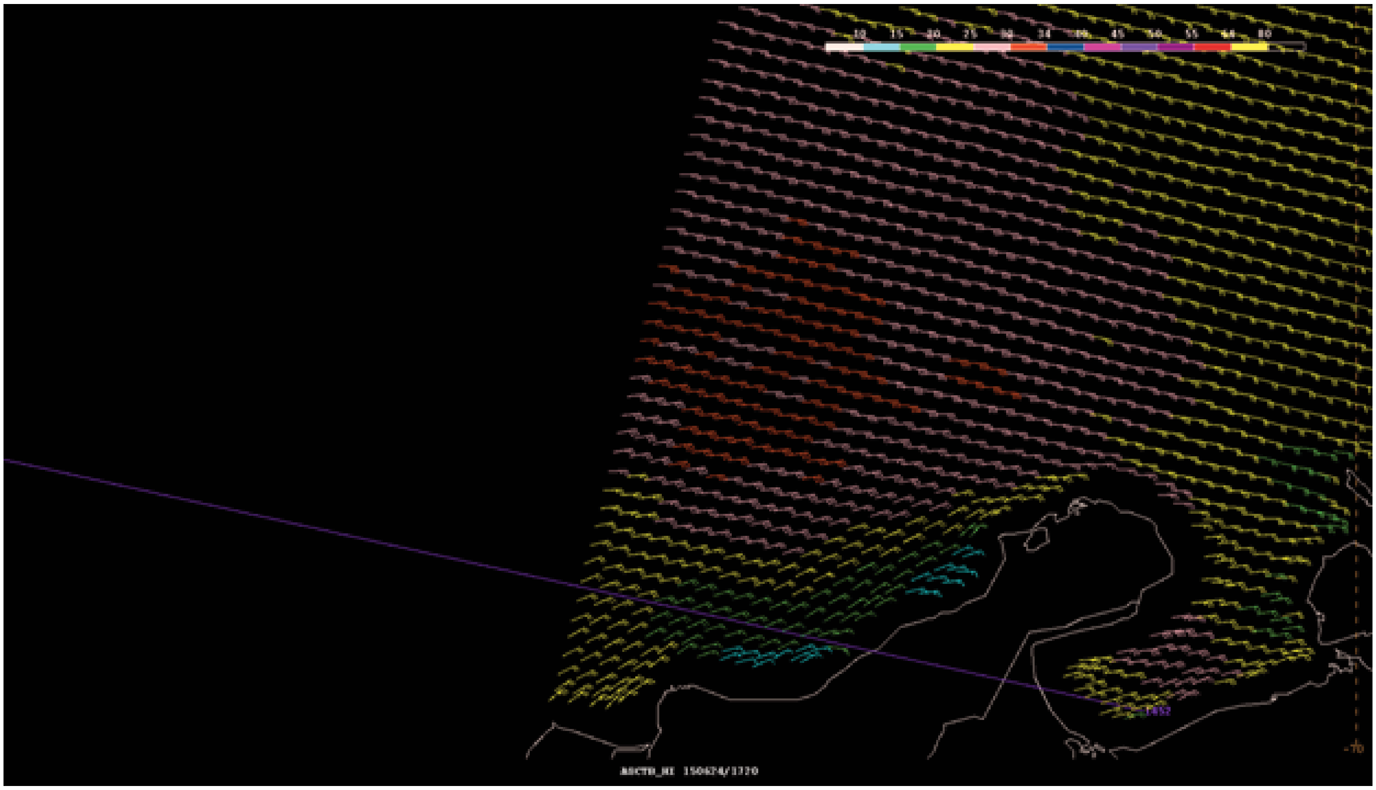


**Figure 5. METOP-A Advanced Scatterometer (ASCAT) wind retrieval at 1452 UTC 24 June with gale force winds in the SW Caribbean Sea.**

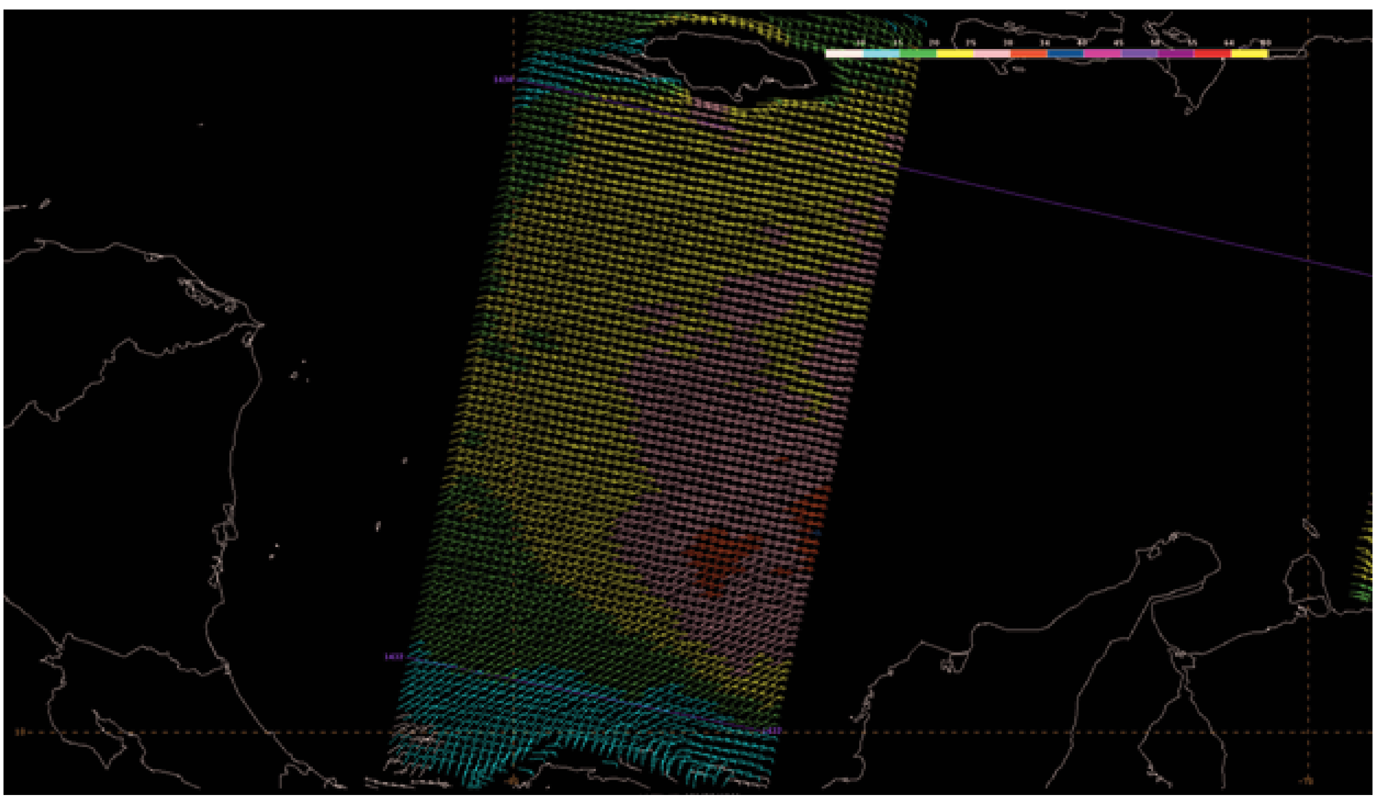


**Figure 6. METOP-A Advanced Scatterometer (ASCAT) wind retrieval at 1432 UTC 25 June with gale force winds in the SW Caribbean Sea.**

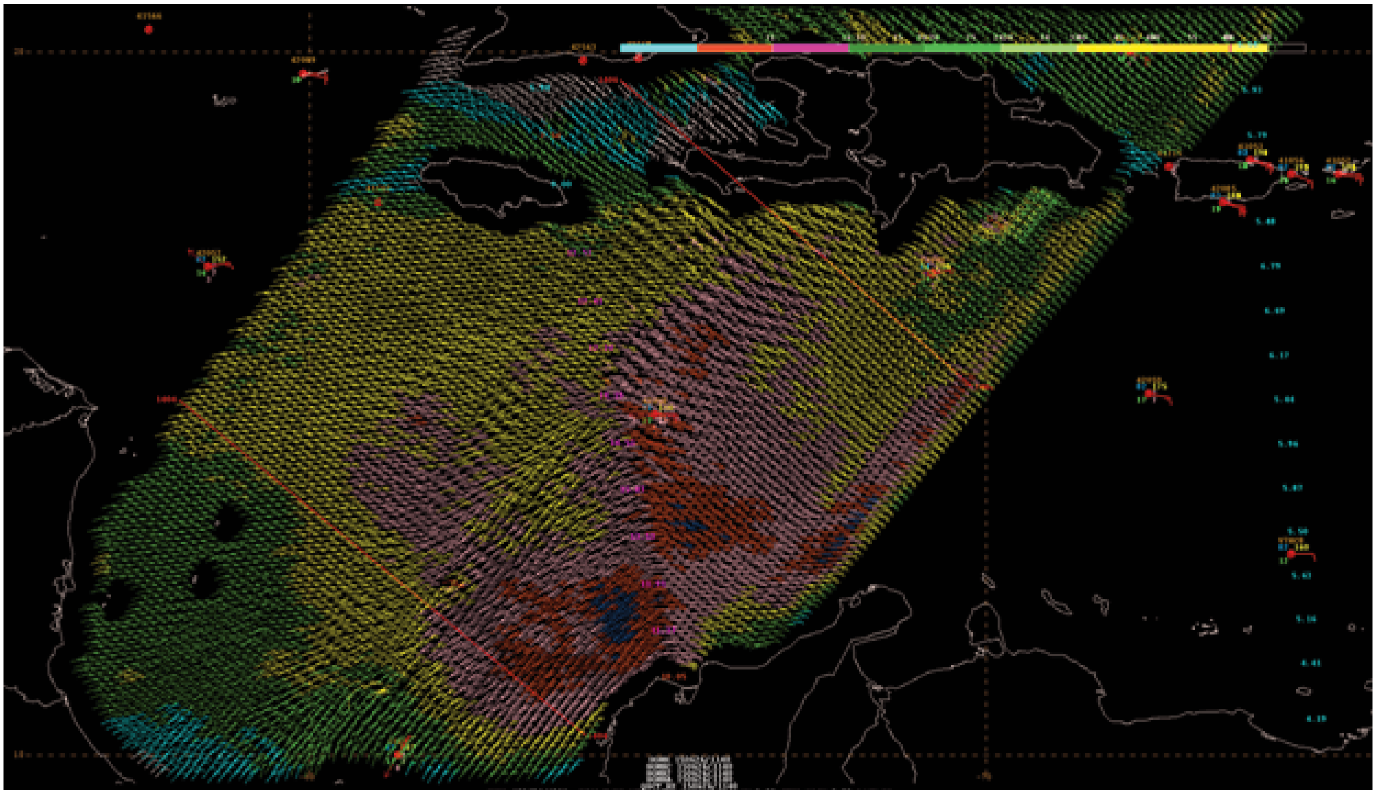


**Figure 7. RapidScat scatterometer pass at 1406 UTC 26 June. This pass includes satellite-derived altimeter sea height measurements (ft) that showed seas up to 15.87 ft in the SW Caribbean Sea.**

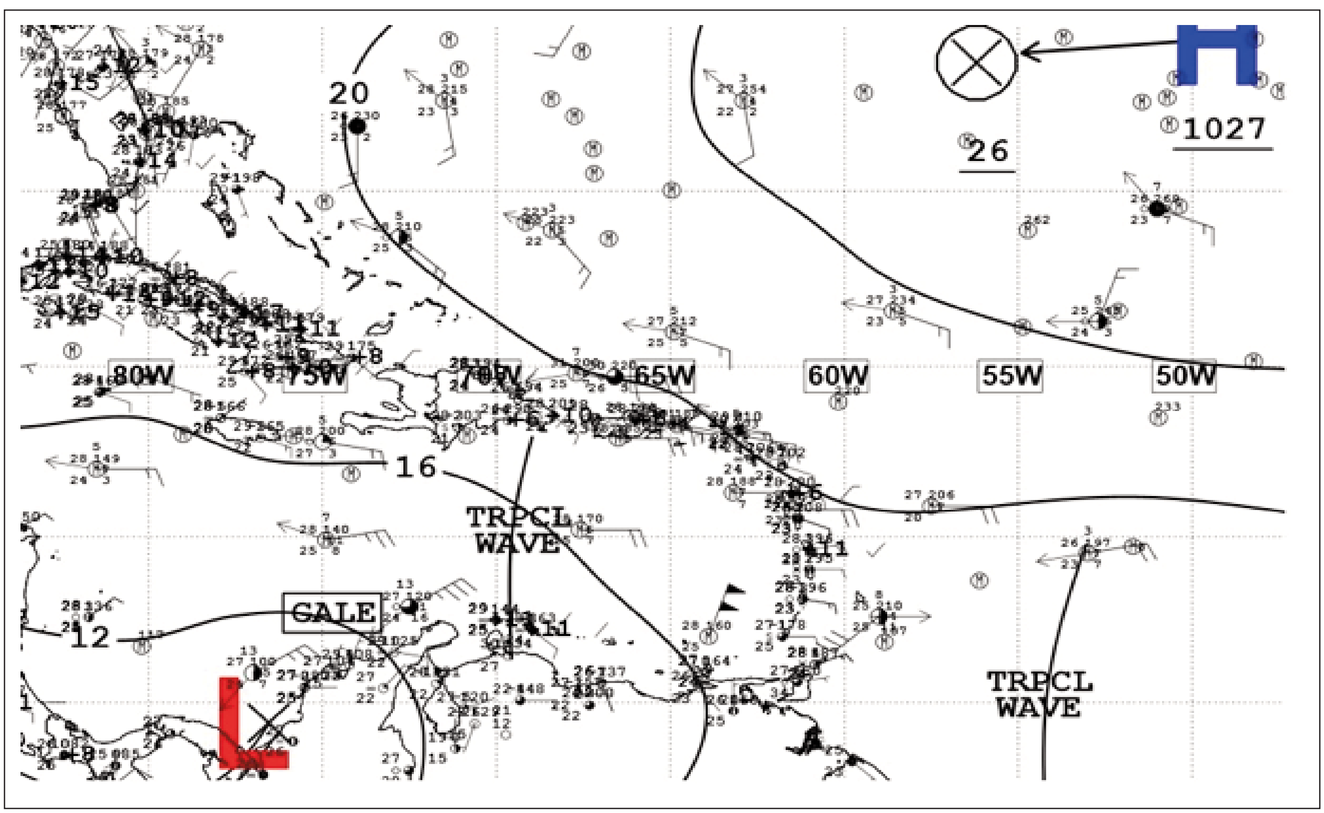



**Figure 8. National Weather Service Unified Surface Analysis from 1200 UTC 27 June.**

Note the tight gradient near the coast of Colombia with the approaching tropical wave. The culprit pressure gradient of this gale event weakened just enough to allow for the gale winds to diminish just below gale force soon after 12 UTC on 27 June.

The event that started at 06 UTC 29 June lasted for 18 hours. An observation from ship **ESMERALDA** (CCES) indicated east winds of 35 kts at 06 UTC on 29 June near 12N74W. Interestingly, this ship is registered with the Chilean military, and was sailing east-northeast near the coast of Colombia at that time possibly on a training mission (**Figure 9**). The tight pressure gradient over much of the SW Caribbean Sea was further enhanced by passage of a quick moving tropical wave. Note the observation from ship **ESMERALDA** (CCES) with 35 kts winds located just to the southeast of the GALE text label on the map). The event that started at 00 UTC 30 June was nicely captured by an ASCAT scatterometer pass that morning (**Figure 10**). During the event that began on 29 July at 00 UTC ship **BRITISH MERLIN** (VQOG5) reported northeast winds of 40 kts at 12 UTC on 29 July near 12N75W. The remaining gale events occurred under a similar synoptic scale pattern as described above.

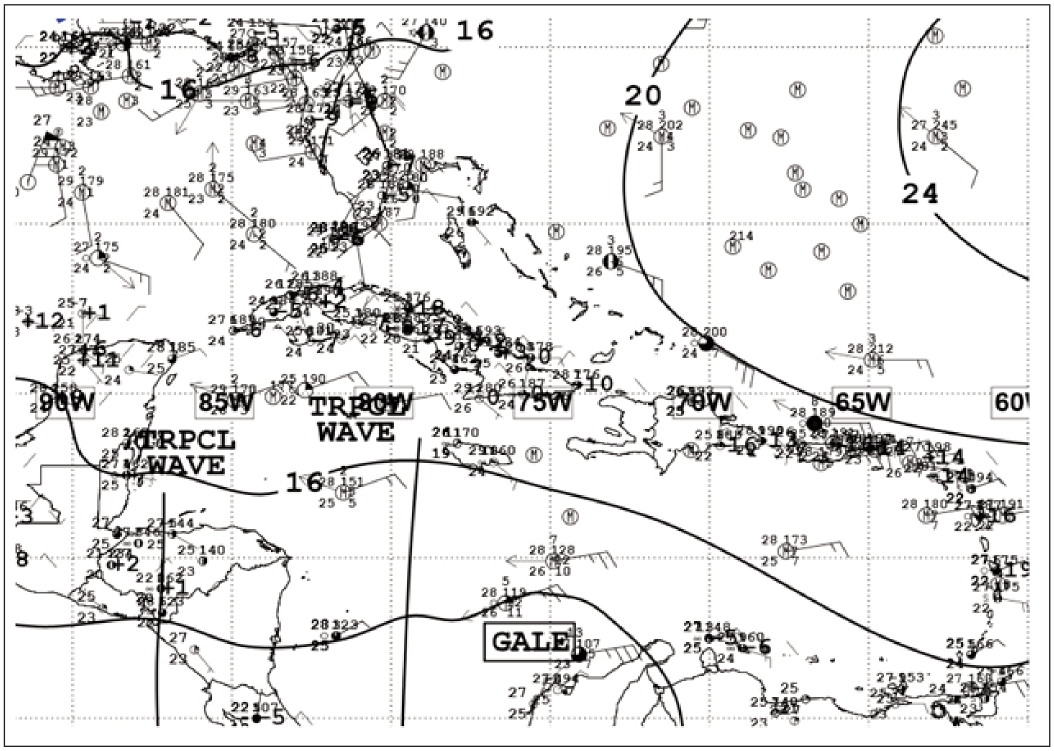



**Figure 9. National Weather Service Unified Surface Analysis from 0600 UTC 29 June.**

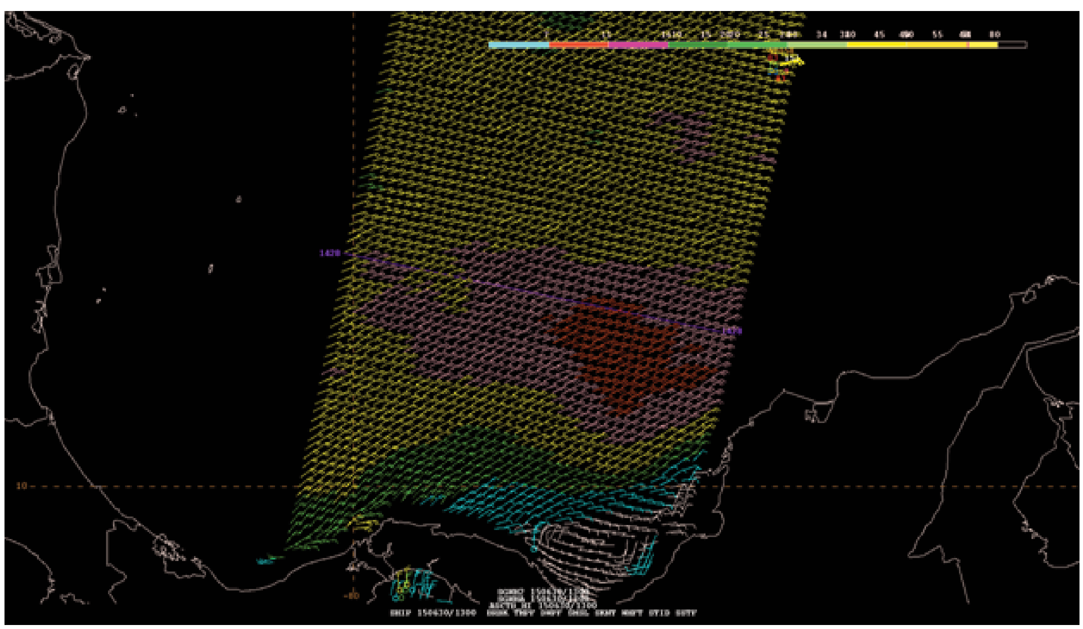


**Figure 10. METOP-B Advanced Sscatterometer (ASCAT) wind retrieval at 1428 UTC 30 June. Note the area of 25-30 kts winds with an embedded swath of 30 to 35 kts winds (red color) northwest of Colombia).**

# Pre-Ana Gale Event

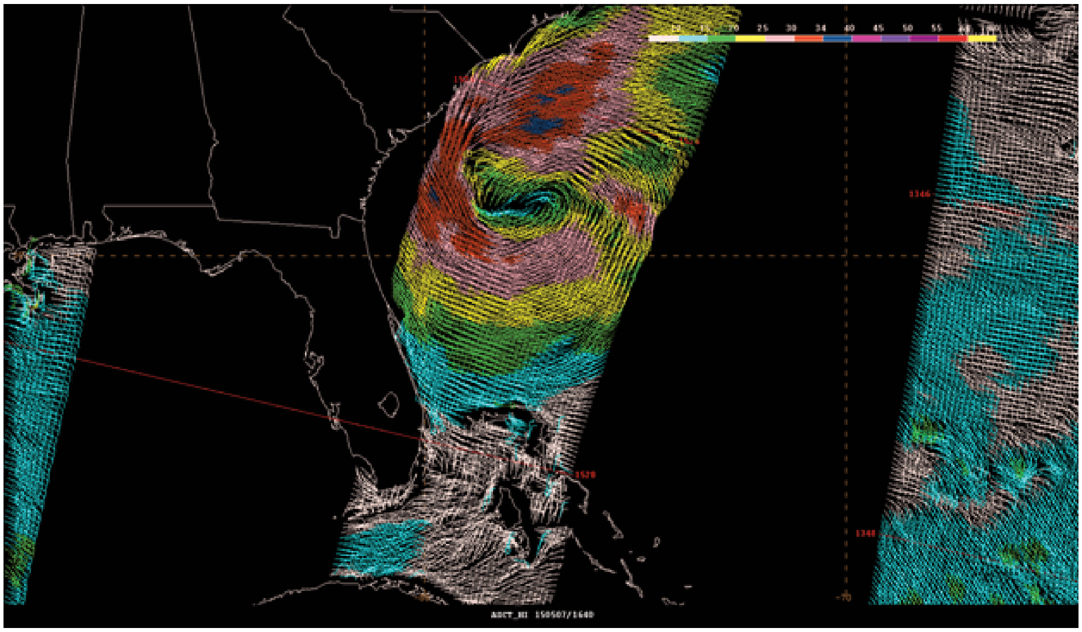


Figure 11. Advanced scatterometer ASCAT wind retrieval at 1528 UTC 7 May. Note the solid area of gale force winds affecting the TAFB forecast area in the southeast and southwest quadrants of the low.

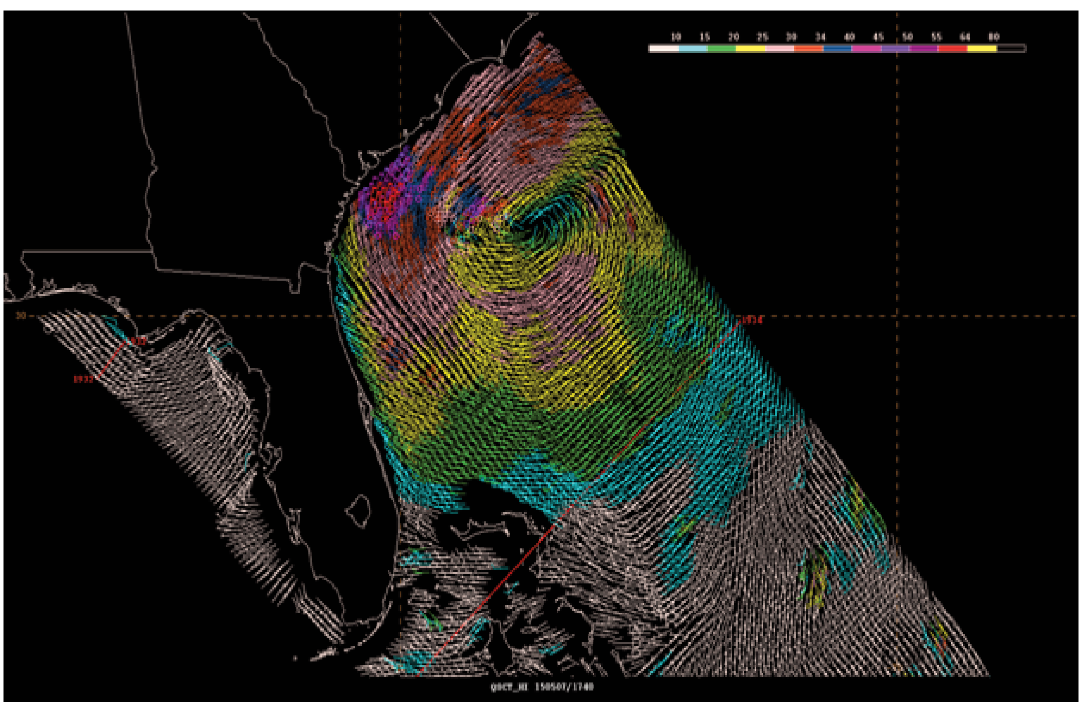


Figure 12. RapidScat scatterometer data at 1934 UTC 7 May.

Low pressure of 1004 mb near 31N77W on the morning of 7 May was accompanied by gale force winds of 25 to 35 kts within 60 nmi of the low in the southwest quadrant with seas in the range of 8 to 11 ft range (**Figure 11**).

These winds were also captured by Air Force Hunter aircraft that same morning. By 1800 UTC that same day the gale force winds had expanded to within 90 nmi of the low in the southwest quadrant, and within 60 nmi in the southeast quadrant revealed in a RapidScat pass from thatafternoon (**Figure 12**).

The low was classified as subtropical Storm Ana at 03 UTC 8 May near 31.5N77.6W or 170 nmi south-southeast of Myrtle Beach South Carolina.

# Post-Erika Gale Event

On the morning of 29 August, Tropical Storm Erika degenerated to a remnant low near the eastern coast of Cuba, and continued on a west-northwestward motion along the central coast of Cuba during that afternoon. The synoptic pattern that day featured a 1022 hPa high pressure center well to the northeast of the low (**Figure 13**). The tight pressure gradient between the high center and the remnant low intitiated gale force winds of 30 to 35 kts within 90 nmi in the northeast quadrant, and 120 nmi in the east quadrant of the low with seas of 9 to 12 ft. ASCAT scatterometer data from that morning confirmed the gale force winds prompting the issuance of a gale warning (**Figure 14**).

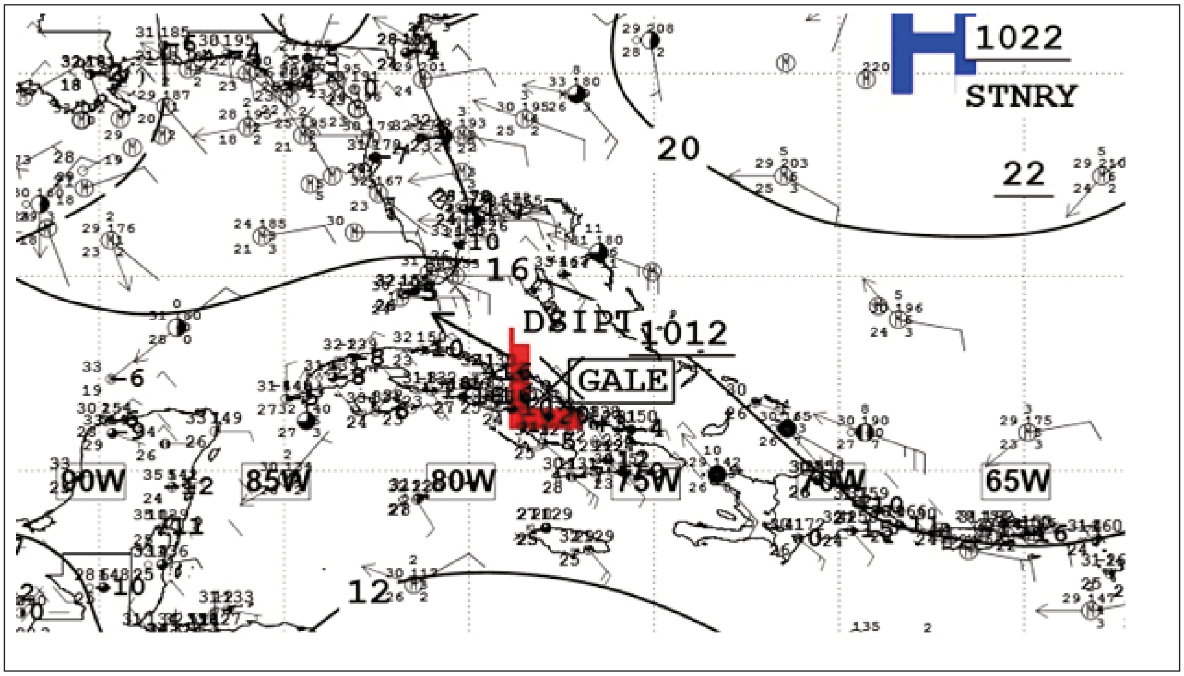
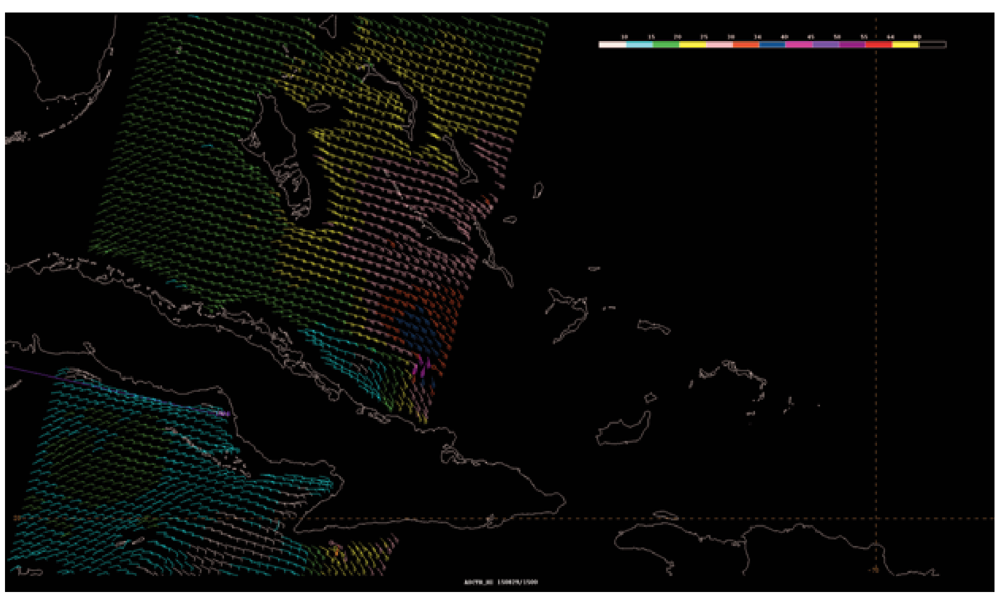



**Figure 13. National Weather Service Unified Surface Analysis (USA) from 1800 UTC 29 Aug. Note the tight pressure gradient northeast and east of the 1012 hPa remnant low.**

The gale force winds were also confirmed from reports from an Air Force Reserve Hunter aircraft flying in the area of the low. The low weakened to a trough near the coast of central Cuba by 00 UTC 30 August with an area of gale force winds roughly from 22N to 24N between 76.5W and 78W. By 0600 UTC 30 August, the trough was along 81W from 21N to 25N with associated winds having diminshed to just below gale force.

**Figure 14. METOP-B Advanced Scatterometer ASCAT wind retrieval at 1524 UTC 29 Aug. Note area of gale winds northeast and east of the low confined between the Bahamas and Cuba.**



# Eastern North Pacific Ocean

One significant warning event (not associated with tropical cyclones) was documented by scatterometer data in the May through August 2015 time period. **Table 2** provides details on the gale wind event.

**Table 2. Non-tropical cyclone warnings issued for the subtropical and tropical eastern North Pacific between 1 May and 31 August 2015.**

| ONSET | REGION | PEAK WIND (kts) | GALE DURATION (STORM) | FORCING |
|---|---|---|---|---|
| 06 UTC 24 June | Gulf of Tehuantepec | 35 | 30 h | Pressure Gradient |

Strong high pressure in the northern Gulf of Mexico and low pressure associated with the monsoon trough south of Central America created a tight pressure gradient across southern Mexico in late June. GFS global model forecasts indicated local effects would allow peak 10 meter winds in the Gulf of Tehuantepec to reach 35 kts around sunrise on the mornings of June 24th and 25th, for which a gale warning was issued 18 hours prior to the expected onset of the high wind event. ASCAT scatterometer passes at 0308 UTC and 1538 UTC on 24 June revealed 30-32 kts winds extending downwind from the Isthmus of Tehuantepec. (**Figure 15**) Winds in excess of 34 kts were likely between the overpass times from 0600 to 1200 UTC. No scatterometer data was available in the Gulf of Tehuantepec the morning of June 25th, and no ships were reported passing through the region of gale force winds. In addition, gale or storm warnings were issued on four tropical low pressure systems which eventually became tropical cyclones, a summary of which is included in the next paragraph.

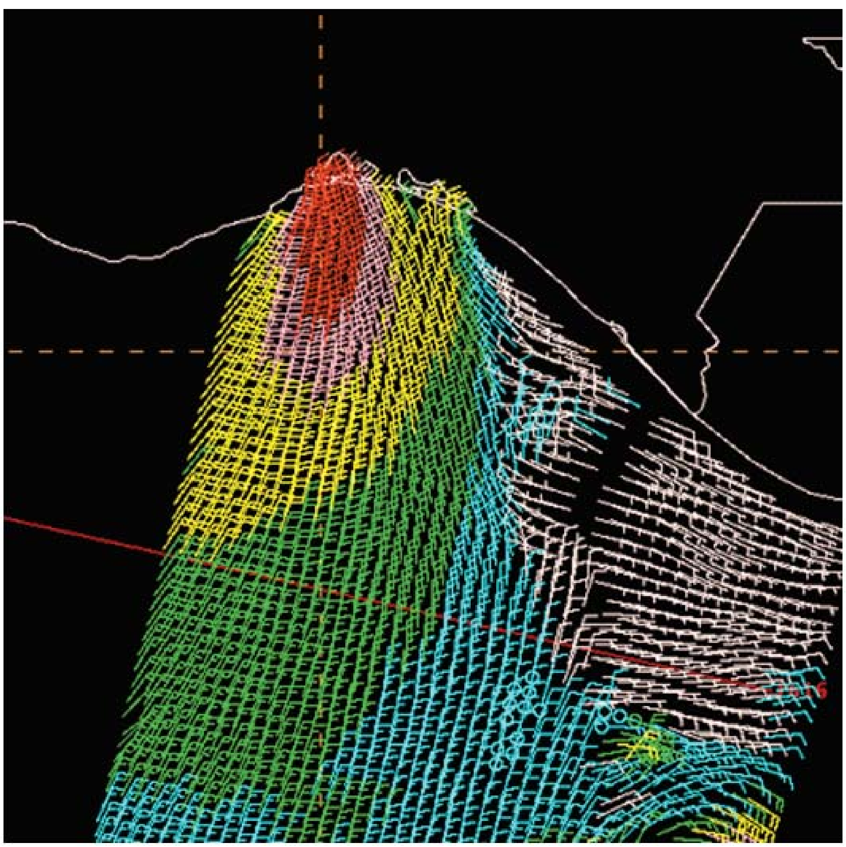


**Figure 15. METOP-A Advanced Scatterometer (ASCAT) pass at 1538 UTC 24 May 2015 depicts near-gale force winds near the coast in the Gulf of Tehuantepec. Highest northerly winds of 30-32 kts (in red) are shown within 45 nmi of the Isthmus of Tehuantepec.**

This represented a minor change in policy at the Tropical Analysis and Forecast Branch (TAFB). In previous tropical cyclone seasons, forecasters refrained from issuing gale and/or storm warnings for closed lows which the global forecast models developed into tropical cyclones within 48 hours, reflecting a general lack of confidence in the various global forecast models to accurately predict the onset of winds in excess of 33 kts for developing tropical lows, thus preferring to wait for the Hurricane Specialist Unit (HSU) to initiate advisories before issuing marine warnings. But recent advances in the ability of forecast models to predict cyclogenesis with greater accuracy has allowed TAFB to take a less restrained approach to marine warnings prior to the first tropical cyclone advisory, as long as there is a very high likelihood of cyclogenesis. Summary of warnings associated with tropical cyclones: A storm warning was issued at 2100 UTC 19 July on a low pressure system with very high potential of becoming a tropical cyclone and forecast models showing winds in excess of 50 kts within 48 hours. The low failed to intensify beyond 30 kts for several days, and the warning was downgraded to a gale 24 hours later, then discontinued altogether at 1200 UTC 22 July. The low eventually consolidated into a tropical cyclone and was named Tropical Storm Felicia at 1500 UTC 23 July. A storm warning was issued at 2100 UTC 29 July for the circulation which was subsequently upgraded to Tropical Storm Guillermo 12 hours later. A gale warning was issued at 1500 UTC 14 Aug for the circulation which became Tropical Depression Eleven-E 36 hours later, and a gale warning was issued at 1500 UTC 26 Aug for the low that became Jimena 12 hours later. A full description of the evolution of these lows from their initial stages up to the point where advisories were initiated is in the tropical cyclone section of this publication. ⚓

# National Weather Service VOS Program New Recruits:

## July through October 2015

| SHIP NAME | CALL SIGN |
|---|---|
| AENEAS | VROV2 |
| ALASKAN LEADER | WDB7198 |
| ALGOLAKE | VCPX |
| ALGOMA TRANSPORT | VCLX |
| BALTIC LEOPARD | V7PX7 |
| BENEDICT SCHULTE | 5BYE3 |
| BERING LEADER | WDC7227 |
| BRISTOL LEADER | WDE7168 |
| CORBIN FOSS | WDB5265 |
| CSL ST-LAURENT | CFK5152 |
| CWB MARQUIS | XJBO |
| EVER SMART | MLBD9 |
| GREEN BAY | WDI3177 |
| HH EMILIA | D5IM6 |
| INLAND SEAS | WCJ6214 |
| IVS MERLION | S6LP5 |
| MAERSK KINGSTON | 9HA3344 |
| MT. MITCHELL | WDA9674 |
| NAKOLO | WDD9308 |
| NYK ARCADIA | 3EXI5 |
| PACIFIC SANTA ANA | A8WI3 |
| REUBEN LASKER (AWS) | WTEG |
| RT. HON. PAUL J. MARTIN | VGFJ |
| SAGA CREST | VRWR7 |
| SAGA TUCANO | VRVP2 |
| SEA-LAND WASHINGTON | 9HA3421 |
| SEASPAN CHIWAN | VRBH3 |
| SUSAN MAERSK | OYIK2 |

# VOS Program
# Cooperative Ship Report:
## January 1 through October 31, 2015

| SHIP NAME | CALL | Status | PMO | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ADRIAN MAERSK | OXLD2 | A | New York City | 0 | 5 | 9 | 0 | 0 | 5 | 0 | 13 | 9 | 0 | | | 41 |
| ADVENTURE OF THE SEAS | C6SA3 | A | Miami | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| ADVENTURER | WBN3015 | A | Jacksonville | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| AENEAS | VROV2 | | New York City | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| AL HUWAILA | C6VG2 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| ALASKA MARINER | WSM5364 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 8 | 19 | 62 | 22 | 11 | | | 122 |
| ALASKA TITAN | WDE4789 | A | Anchorage | 16 | 30 | 40 | 11 | 21 | 17 | 16 | 16 | 13 | 21 | | | 192 |
| ALASKAN EXPLORER | WDB9918 | A | Anchorage | 85 | 53 | 70 | 92 | 99 | 100 | 76 | 54 | 42 | 21 | | | 692 |
| ALASKAN FRONTIER | WDB7815 | A | Anchorage | 82 | 61 | 65 | 47 | 46 | 77 | 51 | 47 | 46 | 66 | | | 588 |
| ALASKAN LEADER | WDB7198 | A | Anchorage | 0 | 0 | 0 | 8 | 0 | 11 | 7 | 2 | 2 | 0 | | | 30 |
| ALASKAN LEGEND | WDD207 | A | Anchorage | 31 | 24 | 32 | 71 | 100 | 32 | 36 | 67 | 160 | 61 | | | 614 |
| ALASKAN NAVIGATOR | WDC664 | A | Anchorage | 185 | 135 | 120 | 140 | 158 | 142 | 0 | 0 | 125 | 128 | | | 1133 |
| ALBEMARLE ISLAND | C6LU3 | A | Miami | 47 | 24 | 17 | 26 | 28 | 18 | 24 | 34 | 24 | 23 | | | 265 |
| ALERT | WCZ7335 | A | Anchorage | 0 | 5 | 0 | 8 | 4 | 2 | 17 | 5 | 0 | 0 | | | 41 |
| ALGOLAKE | VCPX | A | Duluth | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31 | | | 31 |
| ALGOMA EQUINOX | XJBH | | Duluth | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | | | 5 |
| ALGOMA GUARDIAN | CFK9698 | A | Duluth | 0 | 0 | 0 | 3 | 41 | 40 | 50 | 10 | 1 | 48 | | | 193 |
| ALGOMA MARINER | CFN5517 | A | Duluth | 0 | 0 | 2 | 5 | 1 | 9 | 7 | 4 | 4 | 6 | | | 38 |
| ALGOMA NAVIGATOR | VGMV | A | Duluth | 0 | 0 | 0 | 3 | 20 | 43 | 48 | 16 | 0 | 0 | | | 130 |
| ALLIANCE FAIRFAX | WLMQ | A | Jacksonville | 15 | 22 | 67 | 59 | 28 | 0 | 0 | 0 | 21 | 29 | | | 241 |
| ALLIANCE NORFOLK | WGAH | A | Jacksonville | 9 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | | | 38 |
| ALLIANCE ST LOUIS | WGAE | A | Charleston | 8 | 3 | 0 | 12 | 24 | 0 | 0 | 26 | 19 | 15 | | | 107 |
| ALLURE OF THE SEAS | C6XS8 | A | Miami | 35 | 28 | 15 | 42 | 5 | 8 | 4 | 43 | 33 | 28 | | | 241 |
| ALPENA | WAV4647 | A | Duluth | 13 | 0 | 0 | 27 | 22 | 31 | 34 | 45 | 49 | 101 | | | 322 |
| AM HAMBURG | V7ZZ5 | A | Anchorage | 18 | 1 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | | | 35 |
| AMERICAN CENTURY | WDD2876 | A | Duluth | 168 | 1 | 0 | 153 | 173 | 140 | 131 | 89 | 194 | 298 | | | 1347 |
| AMERICAN COURAGE | WDD2879 | A | Duluth | 0 | 0 | 0 | 0 | 26 | 31 | 2 | 6 | 3 | 31 | | | 99 |
| AMERICAN INTEGRITY | WDD2875 | A | Duluth | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 23 | 11 | 18 | | | 60 |
| AMERICAN MARINER | WQZ7791 | A | Duluth | 37 | 0 | 0 | 11 | 55 | 21 | 22 | 6 | 37 | 122 | | | 311 |
| AMERICAN SPIRIT | WCX2417 | A | Duluth | 9 | 0 | 0 | 17 | 44 | 35 | 21 | 77 | 43 | 13 | | | 259 |
| AMSTERDAM | PBAD | A | Anchorage | 102 | 71 | 55 | 181 | 176 | 134 | 93 | 81 | 116 | 167 | | | 1176 |
| ANDROMEDA VOYAGER | C6FZ6 | A | Anchorage | 214 | 4 | 49 | 47 | 58 | 27 | 82 | 86 | 116 | 167 | | | 682 |
| ANTONIS I. ANGELICOUSSIS | C6FP5 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| ANTWERPEN | VRBK6 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| APL AGATE | WDE8265 | A | Charleston | 60 | 55 | 34 | 37 | 60 | 75 | 70 | 74 | 30 | 17 | | | 512 |
| APL ANTWERP | 3FRT9 | A | Charleston | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| APL BELGIUM | WDG8555 | A | New York City | 42 | 27 | 69 | 68 | 75 | 37 | 58 | 55 | 59 | 37 | | | 527 |
| APL CHINA | WDB3161 | A | Los Angeles | 43 | 44 | 46 | 61 | 78 | 0 | 31 | 41 | 68 | 37 | | | 449 |
| APL CORAL | WDF6832 | A | Charleston | 38 | 48 | 48 | 34 | 56 | 42 | 19 | 39 | 42 | 32 | | | 398 |

| SHIP NAME | CALL | Status | PMO | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APL CYPRINE | WDE8293 | A | Charleston | 39 | 37 | 37 | 45 | 45 | 45 | 39 | 11 | 7 | 0 | | | 305 |
| APL ENGLAND | 9VDD2 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| APL HOLLAND | 9VKQ2 | A | Los Angeles | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| APL JAPAN | 9V2165 | A | Charleston | 12 | 15 | 8 | 0 | 2 | 3 | 4 | 10 | 1 | 0 | | | 55 |
| APL KOREA | WCX8883 | A | Los Angeles | 56 | 78 | 42 | 2 | 42 | 116 | 110 | 196 | 234 | 60 | | | 936 |
| APL PHILIPPINES | WCX8884 | A | Los Angeles | 19 | 3 | 46 | 63 | 56 | 63 | 44 | 43 | 20 | 23 | | | 380 |
| APL SAVANNAH | 9V9919 | A | New Orleans | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| APL SCOTLAND | 9VDD3 | A | New York City | 71 | 46 | 69 | 19 | 20 | 15 | 15 | 14 | 3 | 0 | | | 272 |
| APL SINGAPORE | WCX8812 | A | Los Angeles | 50 | 46 | 54 | 27 | 45 | 17 | 17 | 22 | 84 | 36 | | | 398 |
| APL THAILAND | WCX8882 | A | Los Angeles | 36 | 22 | 0 | 30 | 41 | 28 | 30 | 26 | 47 | 54 | | | 314 |
| APL TOURMALINE | 9VVP | A | Charleston | 0 | 0 | 4 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | | | 12 |
| APL WASHINGTON | VRFD6 | A | Los Angeles | 38 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 4 | 0 | | | 50 |
| AQUARIUS VOYAGER | C6UC3 | A | Jacksonville | 6 | 0 | 16 | 9 | 46 | 3 | 4 | 2 | 1 | 27 | | | 114 |
| ARCTIC BEAR | WBP3396 | A | Anchorage | 0 | 0 | 0 | 5 | 39 | 14 | 8 | 3 | 9 | 10 | | | 88 |
| ARCTIC TITAN | WDG2803 | A | Anchorage | 38 | 23 | 33 | 11 | 9 | 28 | 31 | 5 | 3 | 44 | | | 225 |
| ARCTURUS VOYAGER | C6YA7 | A | Anchorage | 13 | 10 | 23 | 34 | 41 | 61 | 5 | 0 | 0 | 18 | | | 205 |
| ARI CRUZ | WDG9588 | A | Anchorage | 1 | 0 | 0 | 1 | 0 | 0 | 4 | 2 | 3 | 0 | | | 11 |
| ARIES VOYAGER | C6UK7 | A | Anchorage | 26 | 16 | 27 | 14 | 11 | 24 | 27 | 21 | 40 | 3 | | | 209 |
| ARNOLD MAERSK | OXES2 | A | Seattle | 38 | 0 | 33 | 0 | 0 | 31 | 0 | 27 | 43 | 0 | | | 172 |
| ASIAN KING | 3FYS8 | A | Charleston | 78 | 49 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 133 |
| ATLANTIC BREEZE | VRDC6 | A | Anchorage | 0 | 0 | 42 | 73 | 42 | 72 | 3 | 0 | 0 | 0 | | | 232 |
| ATLANTIC CARTIER | SCKB | A | Norfolk | 32 | 25 | 46 | 28 | 45 | 44 | 43 | 34 | 16 | 29 | | | 342 |
| ATLANTIC EXPLORER (AWS) | WDC9417 | A | Anchorage | 196 | 185 | 322 | 281 | 195 | 150 | 10 | 258 | 309 | 230 | | | 2136 |
| ATLANTIC GEMINI | VRDO9 | A | Anchorage | 23 | 28 | 29 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | | | 94 |
| ATLANTIC GRACE | VRDT7 | A | Anchorage | 9 | 0 | 0 | 0 | 0 | 0 | 74 | 57 | 64 | 38 | | | 242 |
| ATLANTIC HOPE | VRDT5 | A | Baltimore | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 69 | | | 75 |
| ATLANTIC ROSE | VREF7 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| ATLANTIS (AWS) | KAQP | A | Anchorage | 727 | 444 | 740 | 694 | 318 | 560 | 728 | 740 | 713 | 699 | | | 6363 |
| ATTENTIVE | WCZ7337 | A | Kodiak | 0 | 0 | 0 | 2 | 3 | 1 | 0 | 15 | 0 | 4 | | | 25 |
| AURORA | WYM9567 | A | Anchorage | 30 | 0 | 0 | 0 | 48 | 387 | 228 | 80 | 74 | 242 | | | 1089 |
| AURORA LEO | V7GI7 | A | Anchorage | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 10 |
| AURORA TAURUS | V7EX3 | A | Anchorage | 0 | 7 | 0 | 0 | 12 | 5 | 1 | 0 | 0 | 0 | | | 25 |
| AVIK | WDB7888 | A | Anchorage | 0 | 0 | 0 | 0 | 5 | 4 | 3 | 2 | 1 | 1 | | | 16 |
| AWARE | WCZ7336 | A | Kodiak | 4 | 0 | 0 | 0 | 3 | 1 | 0 | 36 | 35 | 30 | | | 109 |
| AZAMARA QUEST | 9HOM8 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| BADGER | WBD4889 | A | Duluth | 0 | 0 | 0 | 0 | 16 | 78 | 61 | 60 | 17 | 7 | | | 239 |
| BALTIC COVE | A8VG9 | A | Anchorage | 7 | 17 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 27 |
| BALTIC LEOPARD | V8VG9 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | | | 21 |
| BALTIC WOLF | V7QX8 | A | Anchorage | 6 | 7 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | | | 26 |
| BANSUI | 3FMI5 | A | Los Angeles | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| BARBARA FOSS | WYL4318 | A | Anchorage | 84 | 14 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | | | 103 |
| BARRINGTON ISLAND | C6QK | A | Miami | 45 | 32 | 37 | 31 | 41 | 41 | 24 | 0 | 27 | 35 | | | 313 |
| BBC TASMANIA | V2CZ2 | A | Charleston | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| BELL M. SHIMADA (AWS) | WTED | A | Seattle | 18 | 227 | 233 | 377 | 173 | 304 | 495 | 566 | 500 | 173 | | | 3066 |
| BERGE NANTONG | VRBU6 | A | Anchorage | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 2 |

| SHIP NAME | CALL | Status | PMO | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BERGE NINGBO | VRBQ2 | A | Anchorage | 12 | 5 | 32 | 13 | 44 | 38 | 41 | 6 | 3 | 0 | | | 194 |
| BEARING LEADER | WDC7227 | A | Anchorage | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 3 | | | 7 |
| BERLIAN EKUATOR | HPYK | A | Anchorage | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | | | 5 |
| BERNARDO QUINTANA A. | C6KJ5 | A | New Orleans | 63 | 62 | 45 | 60 | 80 | 76 | 83 | 69 | 33 | 63 | | | 634 |
| BILLIE H. | WCY4992 | A | Anchorage | 0 | 0 | 0 | 3 | 6 | 4 | 8 | 5 | 4 | 0 | | | 30 |
| BISMARCK SEA | WDE5016 | A | Anchorage | 0 | 0 | 0 | 2 | 4 | 2 | 1 | 6 | 3 | 2 | | | 20 |
| BLS ABILITY | ELXX8 | A | Anchorage | 13 | 10 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 121 |
| BLS LIWA | VREF5 | A | Anchorage | 20 | 24 | 14 | 20 | 20 | 16 | 0 | 0 | 9 | 1 | | | 124 |
| BLUEFIN | WDC7379 | A | Seattle | 0 | 0 | 52 | 62 | 82 | 82 | 78 | 96 | 90 | 81 | | | 623 |
| BOMAR QUEST | V7JX5 | A | Anchorage | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 4 |
| BREMEN BRIDGE | 3EIZ7 | A | New York City | 0 | 0 | 0 | 0 | 0 | 23 | 17 | 7 | 0 | 0 | | | 47 |
| BRILLIANCE OF THE SEAS | C6SJ5 | A | Miami | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| BRISTOL LEADER | WDE7168 | A | Anchorage | 0 | 1 | 3 | 4 | 0 | 1 | 13 | 2 | 0 | 2 | | | 26 |
| BUCCANEER | WYW5588 | A | Kodiak | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | | | 6 |
| BUFFALO | WXS6134 | A | Duluth | 10 | 0 | 0 | 0 | 56 | 56 | 46 | 45 | 41 | 50 | | | 304 |
| BULK SPAIN | A8VL9 | A | Anchorage | 82 | 4 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | | | 88 |
| BULWARK | WBN4113 | A | Anchorage | 98 | 85 | 49 | 4 | 64 | 22 | 60 | 38 | 36 | 30 | | | 486 |
| BUNGA KELANA 3 | 9MCY6 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| BURNS HARBOR | WDC6027 | A | Duluth | 1 | 0 | 0 | 19 | 71 | 45 | 56 | 59 | 70 | 22 | | | 343 |
| CAFER DEDE | V7PR8 | A | New York City | 24 | 20 | 30 | 5 | 39 | 18 | 6 | 11 | 6 | 0 | | | 159 |
| CALIFORNIA VOYAGER | WDE5381 | A | New Orleans | 22 | 7 | 25 | 22 | 29 | 17 | 33 | 19 | 15 | 11 | | | 200 |
| CALUMET | WDE3568 | A | Duluth | 0 | 0 | 0 | 8 | 25 | 27 | 61 | 29 | 90 | 45 | | | 285 |
| CAPRICORN VOYAGER | C6UZ5 | A | Anchorage | 23 | 0 | 0 | 5 | 13 | 5 | 0 | 0 | 0 | 13 | | | 59 |
| CAPT. STEVEN L. BENNETT | KAXO | A | Houston | 10 | 17 | 25 | 0 | 76 | 1 | 24 | 0 | 0 | 0 | | | 153 |
| CARNIVAL BREEZE | 3FZO8 | A | Miami | 28 | 17 | 30 | 11 | 0 | 1 | 0 | 1 | 0 | 24 | | | 112 |
| CARNIVAL CONQUEST | 3FPQ9 | A | Miami | 8 | 11 | 14 | 13 | 13 | 4 | 8 | 8 | 6 | 12 | | | 97 |
| CARNIVAL DREAM | 3ETA7 | A | Jacksonville | 8 | 3 | 0 | 15 | 19 | 18 | 8 | 3 | 8 | 6 | | | 88 |
| CARNIVAL ECSTASY | H3GR | A | Miami | 17 | 0 | 0 | 31 | 56 | 64 | 66 | 37 | 49 | 285 | | | 605 |
| CARNIVAL ELATION | 3FOC5 | A | New Orleans | 13 | 19 | 25 | 16 | 12 | 11 | 6 | 0 | 0 | 16 | | | 118 |
| CARNIVAL FANTASY | H3GS | A | Charleston | 5 | 1 | 0 | 0 | 42 | 77 | 67 | 32 | 30 | 18 | | | 272 |
| CARNIVAL FASCINATION | C6FM9 | A | Jacksonville | 52 | 55 | 26 | 6 | 12 | 20 | 0 | 53 | 23 | 24 | | | 272 |
| CARNIVAL FREEDOM | 3EBL5 | A | Miami | 0 | 34 | 11 | 53 | 55 | 63 | 83 | 47 | 23 | 22 | | | 391 |
| CARNIVAL GLORY | 3FPS9 | A | Miami | 48 | 35 | 40 | 39 | 40 | 33 | 17 | 35 | 13 | 2 | | | 302 |
| CARNIVAL IMAGINATION | C6FN2 | A | Miami | 13 | 5 | 3 | 1 | 0 | 8 | 5 | 7 | 6 | 6 | | | 54 |
| CARNIVAL INSPIRATION | C6FM5 | A | Los Angeles | 12 | 16 | 5 | 4 | 2 | 1 | 1 | 4 | 1 | 0 | | | 46 |
| CARNIVAL LEGEND | H3VT | A | Miami | 0 | 0 | 0 | 0 | 0 | 0 | 38 | 255 | 266 | 216 | | | 775 |
| CARNIVAL LIBERTY | HPYE | A | Jacksonville | 36 | 27 | 15 | 2 | 2 | 3 | 1 | 2 | 0 | 0 | | | 88 |
| CARNIVAL MAGIC | 3ETA8 | A | Houston | 30 | 3 | 18 | 26 | 30 | 86 | 173 | 123 | 13 | 33 | | | 535 |
| CARNIVAL MIRACLE | H3VS | A | Seattle | 12 | 10 | 17 | 75 | 47 | 2 | 0 | 52 | 115 | 175 | | | 505 |
| CARNIVAL PARADISE | 3FOB5 | A | Miami | 13 | 9 | 1 | 1 | 103 | 18 | 33 | 31 | 15 | 18 | | | 242 |
| CARNIVAL PRIDE | H3VU | A | Jacksonville | 93 | 46 | 32 | 14 | 14 | 15 | 25 | 18 | 19 | 28 | | | 304 |
| CARNIVAL SENSATION | C6FM8 | A | Jacksonville | 25 | 2 | 19 | 24 | 0 | 10 | 10 | 20 | 18 | 4 | | | 132 |
| CARNIVAL SPLENDOR | 3EUS | A | Anchorage | 44 | 29 | 20 | 28 | 6 | 0 | 4 | 3 | 9 | 0 | | | 143 |
| CARNIVAL SUNSHINE | C6FN4 | A | Jacksonville | 0 | 65 | 9 | 10 | 12 | 12 | 92 | 92 | 59 | 47 | | | 398 |
| CARNIVAL TRIUMPH | C6FN5 | A | Houston | 0 | 0 | 0 | 0 | 0 | 10 | 2 | 0 | 0 | 0 | | | 12 |

| SHIP NAME | CALL | Status | PMO | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CARNIVAL VALOR | H3VR | A | Jacksonville | 0 | 6 | 12 | 14 | 0 | 23 | 43 | 24 | 25 | 55 | | | 202 |
| CARNIVAL VICTORY | 3FFL8 | A | Miami | 17 | 25 | 4 | 19 | 14 | 1 | 42 | 60 | 25 | 33 | | | 240 |
| CAROLINE MAERSK | OZWA2 | A | Seattle | 0 | 0 | 0 | 0 | 0 | 91 | 82 | 71 | 29 | 50 | | | 323 |
| CASON J. CALLAWAY | WDH7556 | A | Duluth | 16 | 1 | 0 | 56 | 65 | 87 | 128 | 104 | 54 | 52 | | | 563 |
| CASTOR VOYAGER | C6UZ6 | A | Anchorage | 47 | 17 | 9 | 10 | 6 | 0 | 32 | 0 | 0 | 2 | | | 123 |
| CELEBRITY CONSTELLATION | 9HJI9 | A | Miami | 187 | 184 | 99 | 142 | 99 | 200 | 187 | 210 | 117 | 220 | | | 1645 |
| CELEBRITY ECLIPSE | 9HXC9 | A | Miami | 123 | 137 | 172 | 159 | 230 | 96 | 176 | 215 | 312 | 249 | | | 1869 |
| CELEBRITY EQUINOX | 9HXD9 | A | Miami | 0 | 17 | 73 | 61 | 17 | 0 | 0 | 0 | 0 | 0 | | | 168 |
| CELEBRITY INFINITY | 9HJD9 | A | Miami | 105 | 116 | 105 | 71 | 69 | 52 | 26 | 22 | 0 | 0 | | | 566 |
| CELEBRITY MILLENNIUM | 9HJF9 | A | Anchorage | 178 | 99 | 118 | 119 | 95 | 67 | 98 | 64 | 125 | 106 | | | 1069 |
| CELEBRITY REFLECTION | 9HA3047 | A | Miami | 95 | 67 | 99 | 86 | 53 | 108 | 94 | 77 | 57 | 68 | | | 804 |
| CELEBRITY SILHOUETTE | 9HA2583 | A | Miami | 116 | 125 | 90 | 55 | 12 | 38 | 30 | 19 | 55 | 119 | | | 659 |
| CELEBRITY SOLSTICE | 9HRJ9 | A | Seattle | 336 | 372 | 170 | 8 | 240 | 207 | 178 | 66 | 86 | 210 | | | 1873 |
| CELEBRITY SUMMIT | 9HJC9 | A | Miami | 138 | 52 | 49 | 122 | 173 | 156 | 215 | 194 | 98 | 77 | | | 1274 |
| CENTURION | WBN3022 | A | Jacksonville | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| CHARLES ISLAND | C6JT | A | Miami | 24 | 19 | 32 | 18 | 33 | 23 | 0 | 0 | 0 | 25 | | | 174 |
| CHARLESTON EXPRESS | WDD6126 | A | Houston | 189 | 87 | 57 | 57 | 34 | 59 | 82 | 34 | 70 | 43 | | | 712 |
| CHENEGA | WDC3997 | A | Anchorage | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 10 | 0 | | | 14 |
| CHUKCHI SEA | WDE2281 | A | Anchorage | 0 | 0 | 0 | 3 | 2 | 1 | 0 | 4 | 1 | 2 | | | 13 |
| CLIPPER TRITON | 3FSC3 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| CMB BIWA | ONED | A | Anchorage | 23 | 8 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 34 |
| CMB MAXIME | VRHM4 | A | Anchorage | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | | 1 |
| COASTAL NOMAD | WDC6439 | A | Anchorage | 5 | 3 | 6 | 2 | 4 | 3 | 7 | 8 | 8 | 1 | | | 47 |
| COASTAL PROGRESS | WDC6363 | A | Anchorage | 3 | 2 | 6 | 7 | 8 | 7 | 2 | 6 | 8 | 0 | | | 49 |
| COASTAL TRADER | WSL8560 | A | Anchorage | 7 | 9 | 1 | 8 | 0 | 7 | 8 | 13 | 20 | 3 | | | 76 |
| COASTAL VENTURE | WDF3547 | A | Charleston | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| COLUMBIA | WYR2092 | A | Anchorage | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 1 | 0 | | | 5 |
| COLUMBINE MAERSK | OUHC2 | A | Norfolk | 0 | 0 | 0 | 4 | 0 | 10 | 0 | 0 | 41 | 41 | | | 96 |
| CORBIN FOSS | WDB5265 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 8 | 0 | 10 | | | 23 |
| CORNELIA MAERSK | OWWS2 | A | New York City | 0 | 0 | 9 | 23 | 24 | 3 | 14 | 29 | 31 | 7 | | | 140 |
| CORWITH CRAMER | WTF3319 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 0 | 0 | 0 | | | 50 |
| COSCO DEVELOPMENT | VRIZ9 | A | Anchorage | 60 | 68 | 60 | 53 | 72 | 53 | 40 | 26 | 5 | 7 | | | 444 |
| COSTA ATLANTICA | IBLQ | A | Miami | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| COSTA FASCINOSA | ICPO | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| COSTA FORTUNA | IBNY | A | Miami | 7 | 5 | 43 | 50 | 20 | 8 | 7 | 0 | 44 | 70 | | | 254 |
| COSTA LUMINOSA | ICGU | A | Miami | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 14 |
| COSTA MAGICA | IBQQ | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| COSTA MEDITERRANEA | IBCF | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 67 | 157 | 112 | 67 | | | 403 |
| COURAGE | WDC6907 | A | Baltimore | 15 | 20 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 36 |
| CROSS POINT | WDA3423 | A | Anchorage | 0 | 0 | 0 | 0 | 2 | 6 | 1 | 1 | 2 | 5 | | | 17 |
| CROWNED EAGLE | V7QP4 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| CRYSTAL MARINE | 9VIC4 | A | Anchorage | 54 | 78 | 23 | 16 | 55 | 33 | 104 | 79 | 68 | 11 | | | 521 |
| CRYSTAL SUNRISE | 9V2024 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 19 | 23 | | | 48 |
| CS GLOBAL SENTINEL | V7KR4 | A | Seattle | 0 | 0 | 0 | 0 | 0 | 0 | 65 | 77 | 0 | 0 | | | 142 |
| CSAV LONCOMILLA | VRFB3 | A | Charleston | 10 | 0 | 0 | 8 | 2 | 0 | 39 | 30 | 0 | 48 | | | 137 |

| SHIP NAME | CALL | Status | PMO | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CSAV LUMACO | VRFB5 | A | Charleston | 3 | 0 | 23 | 45 | 58 | 10 | 9 | 0 | 0 | 0 | | | 148 |
| CSCL MANZANILLO | VRFO2 | A | Anchorage | 102 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 102 |
| CSCL MELBOURNE | VRBI8 | A | Anchorage | 15 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 16 |
| CSCL SYDNEY | VRBH9 | A | Norfolk | 20 | 20 | 0 | 0 | 0 | 22 | 32 | 62 | 25 | 12 | | | 193 |
| CSL ASSINIBOINE | VCKQ | A | Duluth | 0 | 0 | 0 | 0 | 16 | 5 | 1 | 43 | 20 | 7 | | | 92 |
| CSL LAURENTIEN | VCJW | A | Duluth | 0 | 0 | 0 | 0 | 16 | 31 | 12 | 37 | 20 | 7 | | | 141 |
| CSL NIAGARA | VCGJ | A | Duluth | 0 | 0 | 0 | 2 | 15 | 0 | 3 | 0 | 0 | 0 | | | 20 |
| CSL ST-LAURENT | CFK5152 | A | Duluth | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 13 | 10 | 15 | | | 88 |
| CWB MARQUIS | XJBO | A | Duluth | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 15 | | | 19 |
| CYGNUS VOYAGER | CO6B | A | San Francisco | 45 | 8 | 0 | 0 | 15 | 7 | 0 | 0 | 0 | 0 | | | 75 |
| DANIEL FOSS | WTS3171 | A | Anchorage | 0 | 0 | 0 | 0 | 6 | 3 | 1 | 0 | 0 | 0 | | | 10 |
| DARYA MA | VRJH5 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| DARYA SHREE | VRZZ2 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| DARYA TARA | VRWS5 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| DEEPWATER CHAMPION | YJVM9 | A | Houston | 69 | 75 | 49 | 63 | 41 | 13 | 47 | 51 | 65 | 54 | | | 527 |
| DEFENDER | WBN3016 | A | Jacksonville | 6 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 10 | | | 24 |
| DELIVERANCE | WDE2632 | A | Kodiak | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | | | 3 |
| DEPENDABLE | V7DI6 | A | Baltimore | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | | | 14 |
| DIANE H | WUR7250 | A | Anchorage | 0 | 0 | 0 | 0 | 3 | 10 | 1 | 6 | 8 | 7 | | | 35 |
| DISCOVERER CLEAR LEADER | V7MO2 | A | Houston | 119 | 101 | 114 | 118 | 108 | 103 | 113 | 121 | 119 | 119 | | | 1135 |
| DISCOVERER DEEP SEAS | V7HC6 | A | Houston | 134 | 182 | 182 | 146 | 173 | 110 | 50 | 56 | 72 | 177 | | | 1282 |
| DISCOVERER INSPIRATION | V7MO3 | A | Houston | 121 | 110 | 120 | 111 | 120 | 94 | 44 | 95 | 119 | 119 | | | 1053 |
| DISCOVERER SPIRIT | V7HC8 | A | Houston | 19 | 2 | 7 | 15 | 29 | 73 | 25 | 18 | 15 | 0 | | | 203 |
| DISNEY DREAM | C6YR6 | A | Jacksonville | 30 | 54 | 34 | 0 | 0 | 22 | 92 | 47 | 32 | 8 | | | 319 |
| DISNEY FANTASY | C6ZL6 | A | Jacksonville | 0 | 0 | 30 | 20 | 0 | 0 | 17 | 358 | 306 | 23 | | | 754 |
| DISNEY MAGIC | C6PT7 | A | Jacksonville | 33 | 28 | 29 | 48 | 17 | 0 | 43 | 14 | 0 | 8 | | | 220 |
| DISNEY WONDER | C6QM8 | A | Miami | 48 | 6 | 6 | 74 | 25 | 5 | 4 | 52 | 51 | 80 | | | 351 |
| DOMINATOR | WBZ4106 | A | Anchorage | 22 | 47 | 38 | 12 | 0 | 0 | 16 | 18 | 21 | 0 | | | 174 |
| DUNCAN ISLAND | C6JS | A | Miami | 8 | 36 | 34 | 25 | 0 | 29 | 68 | 44 | 29 | 42 | | | 315 |
| DUSK | WDE6955 | A | Kodiak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| EAGLE ATLANTA | S6TE | A | Houston | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 45 | | | 84 |
| EAGLE AUSTIN | S6TB | A | Houston | 0 | 0 | 0 | 7 | 8 | 0 | 0 | 0 | 2 | 0 | | | 17 |
| EAGLE BALTIMORE | 9VHG | A | New York City | 124 | 84 | 86 | 63 | 41 | 52 | 87 | 35 | 26 | 31 | | | 629 |
| EAGLE BOSTON | 9VHI | A | New York City | 0 | 13 | 15 | 23 | 24 | 14 | 18 | 17 | 2 | 0 | | | 126 |
| EAGLE FORD | KQXZ | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| EAGLE KANGAR | 9V8472 | A | Houston | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| EAGLE KLANG | 9V8640 | A | Houston | 0 | 0 | 0 | 4 | 10 | 11 | 10 | 5 | 8 | 0 | | | 48 |
| EAGLE KUANTAN | 9V8376 | A | Houston | 0 | 36 | 56 | 77 | 14 | 15 | 25 | 0 | 0 | 0 | | | 223 |
| EAGLE KUCHING | 9V8132 | A | Houston | 0 | 0 | 12 | 26 | 47 | 23 | 24 | 5 | 6 | 22 | | | 165 |
| EAGLE MILAN | 3FBJ6 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| EAGLE OTOME | S6FM | A | New Orleans | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| EAGLE SIBU | 9VIJ3 | A | New York City | 0 | 0 | 0 | 45 | 42 | 47 | 111 | 104 | 65 | 48 | | | 462 |
| EAGLE STAVANGER | 3FNZ5 | A | Houston | 54 | 5 | 0 | 0 | 0 | 0 | 20 | 17 | 0 | 12 | | | 108 |
| EAGLE SYDNEY | 3FUU | A | New York City | 0 | 0 | 0 | 0 | 22 | 64 | 39 | 52 | 45 | 28 | | | 250 |
| EAGLE TAMPA | S6NK6 | A | Houston | 1 | 36 | 37 | 32 | 6 | 10 | 0 | 0 | 0 | 0 | | | 122 |

| SHIP NAME | CALL | Status | PMO | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EAGLE TOLEDO | S6NK3 | A | Houston | 0 | 59 | 75 | 57 | 0 | 0 | 16 | 14 | 0 | 0 | | | 221 |
| EAGLE TORRANCE | 9VMG5 | A | Houston | 150 | 180 | 0 | 0 | 0 | 0 | 0 | 124 | 126 | 134 | | | 714 |
| EAGLE TUCSON | S6NK5 | A | Houston | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 37 | | | 49 |
| EAGLE TURIN | 9VMG6 | A | Houston | 10 | 5 | 15 | 16 | 22 | 19 | 27 | 23 | 12 | 14 | | | 163 |
| EDGAR B. SPEER | WDH7562 | A | Duluth | 2 | 0 | 0 | 48 | 111 | 15 | 142 | 113 | 132 | 171 | | | 734 |
| EDWIN H. GOTT | WDH7558 | A | Duluth | 136 | 0 | 5 | 75 | 165 | 109 | 14 | 108 | 28 | 65 | | | 705 |
| EL YUNQUE | WGJT | A | Jacksonville | 20 | 40 | 51 | 38 | 54 | 43 | 75 | 78 | 46 | 21 | | | 466 |
| EMPIRE STATE | KKFW | A | New York City | 0 | 0 | 0 | 0 | 97 | 45 | 67 | 47 | 0 | 0 | | | 256 |
| ENCHANTMENT OF THE SEAS | C6FZ7 | A | Jacksonville | 0 | 0 | 0 | 0 | 0 | 1 | 20 | 12 | 3 | 1 | | | 37 |
| ENDEAVOR (AWS) | WCE5063 | A | New York City | 743 | 597 | 697 | 720 | 701 | 716 | 737 | 734 | 678 | 691 | | | 7014 |
| ENDURANCE | WDE9586 | A | Houston | 13 | 10 | 24 | 34 | 35 | 37 | 30 | 60 | 43 | 83 | | | 369 |
| ENDURANCE | WDF7523 | A | Kodiak | 17 | 3 | 7 | 6 | 45 | 30 | 39 | 54 | 36 | 12 | | | 249 |
| ENSIGN | WBN3012 | A | Jacksonville | 4 | 0 | 0 | 0 | 10 | 2 | 1 | 0 | 0 | 0 | | | 17 |
| EOT SPAR | WDE9193 | A | Miami | 10 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 15 |
| ERNEST N | A8PQ6 | A | Anchorage | 8 | 5 | 0 | 0 | 13 | 13 | 23 | 40 | 36 | 45 | | | 183 |
| EURODAM | PHOS | A | Miami | 24 | 68 | 142 | 112 | 28 | 28 | 34 | 22 | 63 | 60 | | | 581 |
| EURUS LIMA | A8MH9 | A | New Orleans | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| EURUS LISBON | A8MI2 | A | New Orleans | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| EURUS LONDON | A8MH7 | A | New Orleans | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| EVER DAINTY | 9V7951 | A | Baltimore | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 8 | | | 20 |
| EVER DECENT | 9V7952 | A | New York City | 0 | 2 | 59 | 53 | 65 | 97 | 68 | 64 | 71 | 101 | | | 580 |
| EVER DELIGHT | 3FCB8 | A | New York City | 8 | 1 | 0 | 9 | 5 | 14 | 5 | 5 | 0 | 6 | | | 53 |
| EVER DELUXE | 9V7953 | A | New York City | 0 | 0 | 4 | 2 | 5 | 0 | 0 | 5 | 7 | 0 | | | 23 |
| EVER DEVELOP | 3FLF8 | A | New York City | 0 | 0 | 4 | 9 | 17 | 17 | 9 | 32 | 26 | 0 | | | 114 |
| EVER DEVOTE | 9V7954 | A | New York City | 4 | 1 | 1 | 3 | 0 | 0 | 19 | 7 | 6 | 0 | | | 41 |
| EVER DIADEM | 9V7955 | A | New York City | 0 | 0 | 6 | 5 | 10 | 28 | 71 | 64 | 75 | 69 | | | 328 |
| EVER DYNAMIC | 3FUB8 | A | New York City | 0 | 10 | 16 | 14 | 9 | 11 | 32 | 61 | 83 | 96 | | | 332 |
| EVER EAGLE | ZNZH6 | A | Seattle | 22 | 20 | 23 | 11 | 14 | 21 | 23 | 15 | 18 | 21 | | | 188 |
| EVER ETHIC | VQFS4 | A | Seattle | 22 | 12 | 0 | 0 | 15 | 18 | 5 | 9 | 1 | 0 | | | 82 |
| EVER EXCEL | VSXV3 | A | Los Angeles | 0 | 0 | 0 | 0 | 0 | 42 | 15 | 14 | 1 | 29 | | | 101 |
| EVER LEADING | 2FRK8 | A | Norfolk | 65 | 7 | 31 | 10 | 38 | 17 | 8 | 23 | 0 | 21 | | | 220 |
| EVER LEGACY | 9V9290 | A | New York City | 0 | 0 | 50 | 20 | 52 | 62 | 15 | 32 | 12 | 26 | | | 269 |
| EVER LISSOME | 2HDG3 | A | New York City | 0 | 32 | 25 | 29 | 36 | 5 | 29 | 8 | 16 | 70 | | | 250 |
| EVER LIVEN | BKIE | A | New York City | 0 | 3 | 5 | 12 | 51 | 13 | 35 | 13 | 16 | 91 | | | 239 |
| EVER LIVING | 9V9791 | A | New York City | 33 | 20 | 0 | 16 | 6 | 22 | 3 | 0 | 1 | 0 | | | 101 |
| EVER SAFETY | 3EMQ4 | A | Anchorage | 18 | 12 | 7 | 2 | 4 | 0 | 0 | 0 | 1 | 0 | | | 44 |
| EVER SALUTE | 3ENU5 | A | Anchorage | 0 | 0 | 7 | 1 | 0 | 1 | 14 | 5 | 17 | 14 | | | 59 |
| EVER SHINE | MJKZ4 | A | Anchorage | 0 | 0 | 29 | 5 | 35 | 17 | 6 | 8 | 19 | 52 | | | 171 |
| EVER SMART | MLBD9 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 4 | | | 9 |
| EVER STEADY | 3EHT6 | A | Anchorage | 7 | 34 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | | 48 |
| EVER SUMMIT | 3EKU3 | A | Anchorage | 1 | 0 | 11 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | | | 16 |
| EVER SUPERB | 3EGL5 | A | Anchorage | 9 | 3 | 10 | 8 | 10 | 5 | 0 | 0 | 0 | 0 | | | 45 |
| EVER UBERTY | 9V7960 | A | Seattle | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 12 | 17 | | | 35 |
| EVER ULYSSES | 9V7962 | A | Anchorage | 3 | 1 | 1 | 0 | 0 | 0 | 17 | 17 | 3 | 3 | | | 45 |
| EVER UNIFIC | 9V7961 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |

| SHIP NAME | CALL | Status | PMO | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EVER UNITY | 3FCD9 | A | Seattle | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 61 | 50 | 53 | | | 214 |
| EVER USEFUL | 3FCC9 | A | Anchorage | 5 | 0 | 0 | 6 | 8 | 19 | 22 | 3 | 16 | 7 | | | 86 |
| EVER UTILE | 3FZA9 | A | Seattle | 13 | 30 | 15 | 0 | 8 | 21 | 20 | 20 | 14 | 9 | | | 150 |
| EVEREST SPIRIT | C6FY8 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| EVERGREEN STATE | WDE4430 | A | San Francisco | 0 | 0 | 0 | 12 | 1 | 0 | 0 | 0 | 0 | 0 | | | 13 |
| EXCALIBUR | ONCE | A | Houston | 35 | 20 | 24 | 51 | 39 | 2 | 58 | 55 | 47 | 44 | | | 375 |
| EXCEL | ONAI | A | Houston | 20 | 21 | 30 | 48 | 49 | 55 | 51 | 57 | 42 | 17 | | | 390 |
| EXCELERATE | ONDY | A | Houston | 0 | 7 | 61 | 83 | 76 | 95 | 78 | 107 | 107 | 114 | | | 728 |
| EXCELLENCE | ONBG | A | Houston | 99 | 69 | 45 | 21 | 11 | 5 | 0 | 0 | 0 | 0 | | | 241 |
| EXCELSIOR | ONCD | A | Houston | 22 | 22 | 44 | 43 | 80 | 85 | 116 | 71 | 67 | 26 | | | 576 |
| EXPEDIENT | ONFY | A | Houston | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 64 | 14 | | | 78 |
| EXPLORER | WBN7618 | A | Jacksonville | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 21 | 0 | 0 | | | 34 |
| EXPLORER OF THE SEAS | C6SE4 | A | Jacksonville | 21 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 36 |
| EXQUISITE | ONFX | A | Houston | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 25 |
| FAIRCHEM FILLY | 3EJM9 | A | Anchorage | 21 | 24 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 47 |
| FAIRCHEM FRIESIAN | V7PU7 | A | Anchorage | 1 | 9 | 21 | 21 | 49 | 2 | 9 | 7 | 0 | 1 | | | 120 |
| FAIRCHEM MAVERICK | V7EP2 | A | Anchorage | 1 | 0 | 5 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | | | 18 |
| FAIRCHEM MUSTANG | HPOW | A | Anchorage | 4 | 0 | 4 | 1 | 21 | 22 | 13 | 0 | 0 | 0 | | | 65 |
| FAIRCHEM STEED | 3EBR5 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| FAIRWEATHER | WDB5604 | A | Anchorage | 3 | 2 | 4 | 3 | 2 | 0 | 3 | 0 | 0 | 0 | | | 17 |
| FAIRWEATHER (AWS) | WTEB | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 357 | 534 | 628 | 411 | 468 | | | 2398 |
| FEDERAL KIVALINA | VRWK5 | A | Anchorage | 3 | 0 | 0 | 0 | 0 | 31 | 21 | 19 | 0 | 0 | | | 74 |
| FEDERAL SCHELDE | 8POF | A | Anchorage | 122 | 43 | 0 | 0 | 0 | 0 | 11 | 3 | 5 | 1 | | | 185 |
| FEDERAL SETO | VRZT5 | A | Anchorage | 30 | 8 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 40 |
| FEDERAL SEVERN | V7WS8 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| FEDERAL TAMBO | V7YW3 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | | | 2 |
| FEDERAL TIBER | V7YW2 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| FEDERAL YUKINA | VRHN7 | A | Anchorage | 8 | 18 | 10 | 35 | 26 | 24 | 24 | 0 | 0 | 0 | | | 121 |
| FENNICA | OJAD | A | Seattle | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 106 | 113 | 25 | | | 245 |
| FERDINAND R. HASSLER | WTEK | A | Norfolk | 0 | 0 | 0 | 27 | 0 | 0 | 112 | 244 | 297 | 100 | | | 780 |
| FISH HAWK | WRB5085 | A | Anchorage | 0 | 0 | 0 | 11 | 10 | 19 | 11 | 15 | 7 | 0 | | | 73 |
| FLORIDA VOYAGER | WDF4764 | A | Baltimore | 56 | 21 | 5 | 0 | 1 | 37 | 17 | 14 | 2 | 65 | | | 218 |
| FREEDOM | WDB5483 | A | Jacksonville | 7 | 14 | 32 | 19 | 24 | 19 | 37 | 12 | 12 | 10 | | | 186 |
| FREEDOM OF THE SEAS | C6UZ7 | A | Jacksonville | 0 | 0 | 12 | 24 | 22 | 24 | 29 | 27 | 7 | 3 | | | 148 |
| FRITZI N | A8PQ4 | A | Anchorage | 1 | 0 | 11 | 2 | 14 | 5 | 0 | 0 | 0 | 0 | | | 33 |
| G. L. OSTRANDER | WCV7620 | A | Duluth | 103 | 0 | 0 | 114 | 115 | 126 | 118 | 109 | 78 | 113 | | | 876 |
| GENCO AUGUSTUS | VRDD2 | A | Anchorage | 51 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 64 |
| GENCO CLAUDIUS | V7SY6 | A | Anchorage | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 9 |
| GENCO CONSTANTINE | VRDR8 | A | Anchorage | 2 | 0 | 43 | 89 | 32 | 0 | 0 | 0 | 0 | 0 | | | 166 |
| GENCO HADRIAN | V7QN8 | A | Anchorage | 1 | 1 | 34 | 0 | 0 | 78 | 121 | 132 | 99 | 85 | | | 551 |
| GENCO RAPTOR | V7NB8 | A | Anchorage | 0 | 0 | 0 | 13 | 2 | 29 | 9 | 15 | 20 | 0 | | | 88 |
| GENCO THUNDER | V7LZ4 | A | Anchorage | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 1 |
| GENCO TIBERIUS | VRDD3 | A | Anchorage | 8 | 3 | 3 | 17 | 50 | 1 | 0 | 0 | 0 | 0 | | | 82 |
| GENCO TITUS | VRDI7 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| GENE DUNLAP | WAS2433 | A | Kodiak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |

| SHIP NAME | CALL | Status | PMO | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GENERAL RUDDER | WTAU | A | Houston | 0 | 0 | 0 | 0 | 0 | 41 | 40 | 40 | 0 | 0 | | | 91 |
| GEORGE N | A8PQ5 | A | Anchorage | 36 | 20 | 51 | 9 | 15 | 5 | 44 | 16 | 4 | 1 | | | 201 |
| GLEN CANYON BRIDGE | 3EFD9 | A | Norfolk | 33 | 44 | 64 | 28 | 54 | 52 | 56 | 62 | 66 | 55 | | | 514 |
| GOLDEN BEAR | NMRY | A | San Francisco | 0 | 0 | 0 | 7 | 8 | 4 | 22 | 57 | 0 | 0 | | | 98 |
| GORDON GUNTER (AWS) | WTEO | A | New Orleans | 0 | 0 | 547 | 341 | 392 | 409 | 448 | 565 | 249 | 84 | | | 3035 |
| GORDON JENSEN | WDG3440 | A | Kodiak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| GRANDEUR OF THE SEAS | C6SE3 | A | Jacksonville | 31 | 59 | 48 | 67 | 65 | 51 | 32 | 26 | 16 | 26 | | | 421 |
| GREAT REPUBLIC | WDH7561 | A | Duluth | 90 | 0 | 0 | 9 | 46 | 35 | 40 | 45 | 64 | 39 | | | 368 |
| GREEN BAY | WDI3177 | A | Jacksonville | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | | | 9 |
| GREEN COVE | WDG5660 | A | Baltimore | 156 | 132 | 114 | 43 | 10 | 0 | 0 | 0 | 0 | 0 | | | 455 |
| GREEN LAKE | WDDI | A | Jacksonville | 0 | 53 | 19 | 0 | 1 | 0 | 0 | 0 | 0 | 12 | | | 85 |
| GREEN RIDGE | WZZF | A | Jacksonville | 26 | 21 | 5 | 18 | 4 | 9 | 60 | 33 | 31 | 7 | | | 214 |
| GRETCHEN H | WDC9138 | A | Anchorage | 12 | 14 | 7 | 7 | 2 | 0 | 6 | 0 | 21 | 3 | | | 72 |
| GSF GRAND BANKS | YJUF7 | A | Houston | 0 | 0 | 143 | 144 | 143 | 111 | 143 | 115 | 73 | 0 | | | 872 |
| GUARD | WCY2823 | A | Kodiak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| GUARDIAN | WBO2511 | A | Kodiak | 10 | 2 | 4 | 24 | 6 | 17 | 1 | 23 | 22 | 5 | | | 114 |
| GUARDSMAN | WBN5978 | A | Anchorage | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | | | 3 |
| GULF TITAN | WDA5598 | A | Anchorage | 4 | 5 | 16 | 8 | 13 | 26 | 8 | 16 | 12 | 48 | | | 156 |
| GUTHORM MAERSK | OUJN2 | A | Los Angeles | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| H A SKLENAR | C6CL6 | A | Houston | 138 | 128 | 102 | 131 | 133 | 160 | 129 | 136 | 147 | 153 | | | 1357 |
| H. LEE WHITE | WZD2465 | A | Duluth | 70 | 0 | 0 | 2 | 26 | 7 | 8 | 30 | 31 | 3 | | | 177 |
| HALLE FOSS | WCF3930 | A | Kodiak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| HANJIN AMI | VRNF8 | A | Los Angeles | 125 | 67 | 46 | 53 | 62 | 52 | 10 | 0 | 0 | 4 | | | 419 |
| HANJIN MILANO | V7SG8 | A | New York City | 36 | 47 | 38 | 16 | 31 | 31 | 29 | 61 | 46 | 17 | | | 352 |
| HELENKA B | WAH5520 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| HENRY B. BIGELOW (AWS) | WTDF | A | New York City | 0 | 0 | 335 | 498 | 422 | 393 | 56 | 247 | 537 | 371 | | | 2859 |
| HENRY BRUSCO | WDC9691 | A | Anchorage | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | | | 2 |
| HENRY GOODRICH | YJQN7 | A | Houston | 141 | 112 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 253 |
| HERBERT C. JACKSON | WL3972 | A | Duluth | 284 | 0 | 5 | 694 | 670 | 699 | 717 | 741 | 700 | 740 | | | 5250 |
| HH EMILIA | D5IM6 | A | Charleston | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| HI'IALAKAI (AWS) | WTEY | A | Honolulu | 303 | 607 | 703 | 681 | 220 | 319 | 290 | 637 | 630 | 160 | | | 4550 |
| HOEGH CHIBA | LAVD7 | A | Jacksonville | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| HOEGH MASAN | S6HK | A | Charleston | 0 | 0 | 19 | 21 | 14 | 22 | 24 | 22 | 10 | 9 | | | 141 |
| HON. JAMES L. OBERSTAR | WL3108 | A | Duluth | 263 | 0 | 0 | 693 | 722 | 713 | 728 | 730 | 717 | 739 | | | 5305 |
| HONOR | WDC6923 | A | Baltimore | 24 | 33 | 10 | 11 | 50 | 23 | 17 | 17 | 17 | 14 | | | 216 |
| HOOD ISLAND | C6LU4 | A | Miami | 13 | 47 | 4 | 18 | 23 | 14 | 0 | 7 | 30 | 7 | | | 163 |
| HORIZON ANCHORAGE | KGTX | A | Anchorage | 54 | 62 | 52 | 65 | 53 | 45 | 48 | 45 | 59 | 86 | | | 569 |
| HORIZON CONSUMER | WCHF | A | Seattle | 0 | 5 | 46 | 45 | 35 | 20 | 58 | 48 | 29 | 63 | | | 349 |
| HORIZON ENTERPRISE | KRGB | A | Seattle | 78 | 63 | 73 | 71 | 80 | 61 | 81 | 58 | 0 | 37 | | | 602 |
| HORIZON KODIAK | KGTZ | A | Anchorage | 30 | 40 | 32 | 6 | 41 | 50 | 50 | 61 | 24 | 0 | | | 334 |
| HORIZON PACIFIC | WSRL | A | Seattle | 50 | 51 | 28 | 16 | 0 | 56 | 58 | 32 | 25 | 70 | | | 386 |
| HORIZON RELIANCE | WFLH | A | Los Angeles | 39 | 62 | 18 | 19 | 67 | 49 | 58 | 60 | 48 | 39 | | | 459 |
| HORIZON SPIRIT | WFLG | A | Los Angeles | 75 | 30 | 64 | 64 | 26 | 34 | 69 | 75 | 72 | 0 | | | 509 |
| HORIZON TACOMA | KGTY | A | Anchorage | 55 | 125 | 58 | 51 | 38 | 25 | 38 | 55 | 57 | 33 | | | 535 |
| HOS ACHIEVER | YJVG4 | A | Houston | 49 | 18 | 52 | 26 | 46 | 5 | 7 | 0 | 0 | 0 | | | 203 |

| SHIP NAME | CALL | Status | PMO | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOUSTON | KCDK | A | Miami | 18 | 17 | 63 | 59 | 28 | 4 | 0 | 0 | 0 | 0 | | | 189 |
| HUNTER | WBN3744 | A | Anchorage | 5 | 27 | 7 | 14 | 25 | 23 | 10 | 0 | 0 | 3 | | | 114 |
| HYDRA VOYAGER | C6AB8 | A | Anchorage | 70 | 40 | 63 | 21 | 30 | 13 | 41 | 39 | 22 | 31 | | | 370 |
| IBRAHIM DEDE | V7QW6 | A | New York City | 0 | 0 | 0 | 7 | 0 | 5 | 0 | 27 | 17 | 9 | | | 65 |
| INCENTIVE | WCW9879 | A | Kodiak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| INDEPENDENCE II | WGAX | A | Baltimore | 0 | 0 | 0 | 24 | 53 | 40 | 50 | 33 | 28 | 45 | | | 273 |
| INDEPENDENCE OF THE SEAS | C6WW4 | A | Miami | 20 | 7 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 7 | | | 35 |
| INDIANA HARBOR | WXN3191 | A | Duluth | 0 | 0 | 0 | 0 | 1 | 15 | 8 | 6 | 0 | 10 | | | 40 |
| INLAND SEAS | WCJ6214 | A | Duluth | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 12 | | | 16 |
| INTEGRITY | WDC6925 | A | Baltimore | 55 | 40 | 34 | 33 | 49 | 39 | 38 | 50 | 67 | 44 | | | 449 |
| INTEGRITY | WDD7905 | A | Anchorage | 0 | 0 | 0 | 81 | 52 | 21 | 65 | 60 | 32 | 28 | | | 339 |
| ISLAND SCOUT | WDC6588 | A | Kodiak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| IVER FOSS | WYE6442 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 3 | 5 | 30 | 8 | 6 | | | 52 |
| IVS MERLION | S6LP5 | A | Baltimore | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 12 | 6 | | | 38 |
| JAMES L. KUBER | WDF7020 | A | Duluth | 80 | 0 | 0 | 30 | 83 | 75 | 254 | 160 | 128 | 123 | | | 933 |
| JAMES R. BARKER | WYP8657 | A | Duluth | 644 | 0 | 75 | 598 | 654 | 682 | 554 | 183 | 485 | 667 | | | 4542 |
| JEAN ANNE | WDC3786 | A | Los Angeles | 33 | 13 | 13 | 16 | 6 | 21 | 17 | 10 | 8 | 0 | | | 137 |
| JENNY N | A8PQ7 | A | Anchorage | 45 | 1 | 4 | 19 | 3 | 5 | 5 | 9 | 13 | 9 | | | 113 |
| JEWEL OF THE SEAS | C6FW9 | A | Miami | 25 | 18 | 15 | 11 | 6 | 8 | 2 | 1 | 1 | 0 | | | 87 |
| JOHN B. AIRD | VCYP | A | Duluth | 0 | 0 | 0 | 12 | 22 | 38 | 12 | 23 | 30 | 42 | | | 179 |
| JOHN BRIX | WDD9277 | A | Anchorage | 7 | 2 | 9 | 11 | 1 | 3 | 2 | 2 | 0 | 0 | | | 37 |
| JOHN D. LEITCH | VGWM | A | Duluth | 0 | 0 | 0 | 12 | 22 | 7 | 33 | 4 | 0 | 9 | | | 87 |
| JOHN G. MUNSON | WDH7557 | A | Duluth | 5 | 0 | 9 | 19 | 28 | 20 | 49 | 44 | 34 | 41 | | | 249 |
| JONATHAN SWIFT | A8SN5 | A | New York City | 44 | 49 | 60 | 44 | 20 | 0 | 12 | 18 | 92 | 207 | | | 546 |
| JOSEPH L. BLOCK | WXY6216 | A | Duluth | 501 | 0 | 258 | 445 | 711 | 631 | 612 | 617 | 681 | 696 | | | 5152 |
| JUSTINE FOSS | WYL4978 | A | Anchorage | 0 | 37 | 41 | 42 | 18 | 20 | 10 | 12 | 13 | 2 | | | 195 |
| KAAN KALKAVAN | TCTX2 | A | New York City | 2 | 18 | 18 | 13 | 13 | 0 | 10 | 14 | 14 | 52 | | | 154 |
| KAROLINE N | A8PQ8 | A | Anchorage | 13 | 5 | 23 | 33 | 65 | 33 | 32 | 9 | 3 | 4 | | | 220 |
| KATRINA EM | WTK2245 | A | Anclorage | 1 | 3 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 9 |
| KAYE E. BARKER | WCF3012 | A | Duluth | 282 | 0 | 11 | 662 | 701 | 705 | 708 | 678 | 435 | 660 | | | 4842 |
| KEA | D5DG4 | A | Charleston | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| KENNICOTT | WCY2920 | A | Anchorage | 0 | 0 | 4 | 8 | 24 | 10 | 7 | 5 | 17 | 0 | | | 75 |
| KESWICK | C6XE5 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 13 | | | 21 |
| KILO MOANA | WDA7827 | A | Honolulu | 16 | 0 | 17 | 17 | 34 | 8 | 35 | 28 | 38 | 80 | | | 273 |
| KOTA HARUM | 9VFF8 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| KOTA JATI | VRWJ7 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| LAHORE EXPRESS | VRBY8 | A | Anchorage | 34 | 25 | 22 | 18 | 27 | 8 | 0 | 1 | 23 | 16 | | | 174 |
| LAURENCE M. GOULD (AWS) | WCX7445 | A | Seattle | 27 | 151 | 26 | 426 | 671 | 719 | 744 | 743 | 720 | 723 | | | 4950 |
| LAVENDER PASSAGE | 3FJY6 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| LECONTE | WZE4270 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | | | 4 |
| LEE A. TREGURTHA | WUR8857 | A | Duluth | 284 | 0 | 2 | 685 | 691 | 683 | 711 | 704 | 691 | 726 | | | 5177 |
| LIBERTY DESIRE | V7AB6 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| LIBERTY EAGLE | WHIA | A | Houston | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 35 |
| LIBERTY GLORY | WADP | A | Houston | 0 | 0 | 3 | 59 | 40 | 47 | 50 | 64 | 53 | 18 | | | 334 |
| LIBERTY GRACE | WADN | A | Houston | 15 | 5 | 0 | 1 | 29 | 8 | 0 | 0 | 0 | 35 | | | 93 |

| SHIP NAME | CALL | Status | PMO | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LIBERTY OF THE SEAS | C6VQ8 | A | Miami | 0 | 0 | 0 | 16 | 4 | 0 | 0 | 0 | 7 | 0 | | | 27 |
| LIBERTY PRIDE | KRAU | A | Charleston | 46 | 16 | 34 | 29 | 36 | 45 | 43 | 50 | 55 | 74 | | | 428 |
| LIBERTY PROMISE | WWMZ | A | Jacksonville | 28 | 1 | 2 | 0 | 6 | 0 | 0 | 47 | 92 | 40 | | | 216 |
| LION CITY RIVER | 9VJC5 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| LOIS H | WTD4576 | A | Anchorage | 0 | 0 | 1 | 4 | 7 | 0 | 1 | 0 | 0 | 0 | | | 13 |
| LOWLANDS OPAL | ONGH | A | Baltimore | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | | | 6 |
| LOWLANDS ORCHID | ONFP | A | Anchorage | 70 | 74 | 17 | 7 | 38 | 23 | 53 | 43 | 46 | 11 | | | 382 |
| LOWLANDS PHOENIX | 9HIY9 | A | Anchorage | 6 | 1 | 0 | 24 | 8 | 5 | 15 | 6 | 2 | 0 | | | 67 |
| LYLA | V7QK3 | A | Anchorage | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 15 |
| MAASDAM | PFRO | A | Miami | 385 | 366 | 410 | 408 | 335 | 293 | 248 | 263 | 197 | 237 | | | 3142 |
| MADRID SPIRIT | ECFM | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| MAERSK ATLANTA | WNTL | A | Charleston | 8 | 21 | 84 | 84 | 49 | 21 | 45 | 73 | 69 | 67 | | | 521 |
| MAERSK CAROLINA | WBDS | A | Charleston | 35 | 9 | 4 | 20 | 34 | 37 | 28 | 19 | 38 | 62 | | | 286 |
| MAERSK CHICAGO | WMCS | A | Norfolk | 21 | 20 | 27 | 5 | 25 | 42 | 23 | 10 | 0 | 1 | | | 174 |
| MAERSK COLUMBUS | WMCU | A | Norfolk | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| MAERSK DANANG | A8PS5 | A | New York City | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | | | 10 |
| MAERSK DENVER | WMDQ | A | New York City | 35 | 58 | 44 | 8 | 3 | 28 | 14 | 2 | 22 | 5 | | | 219 |
| MAERSK DETROIT | WMDK | A | Norfolk | 55 | 42 | 27 | 67 | 69 | 69 | 74 | 62 | 27 | 22 | | | 514 |
| MAERSK HARTFORD | WMHA | A | New York City | 36 | 17 | 32 | 24 | 32 | 15 | 5 | 13 | 0 | 2 | | | 176 |
| MAERSK HEIWA | 9V9746 | A | Anchorage | 3 | 1 | 4 | 0 | 7 | 7 | 0 | 0 | 0 | 1 | | | 23 |
| MAERSK IDAHO | WKPM | A | New York City | 28 | 47 | 54 | 63 | 71 | 63 | 46 | 23 | 31 | 12 | | | 438 |
| MAERSK IOWA | KABL | A | Norfolk | 66 | 33 | 18 | 21 | 70 | 51 | 53 | 39 | 62 | 55 | | | 468 |
| MAERSK JAUN | HBDD | A | Charleston | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| MAERSK KENSINGTON | WMKN | A | Charleston | 0 | 0 | 14 | 16 | 17 | 14 | 0 | 17 | 0 | 5 | | | 83 |
| MAERSK KENTUCKY | WKPY | A | New York City | 22 | 5 | 0 | 8 | 16 | 35 | 12 | 2 | 5 | 12 | | | 117 |
| MAERSK KINGSTON | 9HA3344 | A | New York City | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 20 | | | 30 |
| MAERSK KINLOSS | WMKA | A | New York City | 0 | 0 | 0 | 0 | 14 | 1 | 21 | 0 | 0 | 24 | | | 60 |
| MAERSK MEMPHIS | WMMK | A | Charleston | 44 | 76 | 82 | 64 | 65 | 48 | 45 | 68 | 65 | 55 | | | 612 |
| MAERSK MISSOURI | WAHV | A | Norfolk | 55 | 52 | 54 | 37 | 56 | 38 | 17 | 40 | 35 | 35 | | | 419 |
| MAERSK MONTANA | WCDP | A | New York City | 8 | 38 | 53 | 56 | 71 | 37 | 61 | 58 | 69 | 20 | | | 471 |
| MAERSK NIAGARA | VREO9 | A | Anchorage | 17 | 18 | 0 | 0 | 0 | 0 | 8 | 27 | 26 | 14 | | | 110 |
| MAERSK OHIO | KABP | A | New York City | 61 | 21 | 74 | 108 | 112 | 47 | 58 | 26 | 52 | 73 | | | 632 |
| MAERSK PEARY | WHKM | A | Houston | 113 | 81 | 64 | 34 | 20 | 34 | 65 | 19 | 35 | 54 | | | 519 |
| MAERSK PITTSBURGH | WMPP | A | New York City | 86 | 54 | 20 | 32 | 63 | 73 | 52 | 46 | 34 | 78 | | | 538 |
| MAERSK UTAH | WKAB | A | Norfolk | 94 | 80 | 89 | 68 | 71 | 77 | 72 | 83 | 62 | 0 | | | 696 |
| MAERSK WISCONSIN | WKPN | A | Norfolk | 71 | 49 | 13 | 47 | 47 | 16 | 7 | 14 | 11 | 13 | | | 288 |
| MAHIMAHI | WHRN | A | Los Angeles | 0 | 0 | 6 | 15 | 2 | 11 | 17 | 18 | 33 | 8 | | | 110 |
| MAIA H | WYX2079 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | | | 1 |
| MAJESTY OF THE SEAS | C6FZ8 | A | Miami | 24 | 28 | 50 | 46 | 41 | 30 | 29 | 39 | 32 | 32 | | | 351 |
| MALASPINA | WI6803 | A | Anchorage | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | | | 3 |
| MALOLO | WYH6327 | A | Anchorage | 3 | 2 | 1 | 7 | 27 | 30 | 6 | 16 | 7 | 2 | | | 101 |
| MANITOWOC | WDE3569 | A | Duluth | 15 | 0 | 0 | 22 | 65 | 76 | 105 | 114 | 130 | 126 | | | 653 |
| MANOA | KDBG | A | San Francisco | 29 | 7 | 21 | 29 | 12 | 10 | 3 | 2 | 5 | 0 | | | 118 |
| MANUKAI | WRGD | A | Los Angeles | 20 | 36 | 27 | 25 | 34 | 29 | 19 | 42 | 44 | 33 | | | 309 |
| MANULANI | WECH | A | Los Angeles | 3 | 28 | 43 | 0 | 7 | 2 | 29 | 19 | 39 | 36 | | | 206 |

| SHIP NAME | CALL | Status | PMO | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MARCHEN MAERSK | OUIY2 | A | Seattle | 0 | 7 | 33 | 0 | 3 | 11 | 5 | 5 | 12 | 4 | | | 80 |
| MARCUS G. LANGSETH (AWS) | WDC6698 | A | Anchorage | 0 | 0 | 389 | 599 | 699 | 701 | 621 | 737 | 547 | 598 | | | 4891 |
| MARINE EXPRESS | 3FHX2 | A | Anchorage | 0 | 0 | 0 | 0 | 28 | 35 | 2 | 0 | 0 | 0 | | | 65 |
| MARVELLOUS | VRJI2 | A | Baltimore | 34 | 4 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | | | 56 |
| MATANUSKA | WN4201 | A | Anchorage | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | | | 1 |
| MATHILDE MAERSK SKAGEN | OUJS2 | A | Los Angeles | 0 | 0 | 1 | 19 | 4 | 0 | 11 | 6 | 0 | 0 | | | 41 |
| MATSONIA | KHRC | A | Los Angeles | 0 | 5 | 9 | 15 | 29 | 9 | 2 | 14 | 0 | 0 | | | 83 |
| MAUNALEI | KFMV | A | Baltimore | 50 | 28 | 34 | 28 | 28 | 6 | 1 | 21 | 15 | 32 | | | 243 |
| MAUNAWILI | WGEB | A | Los Angeles | 27 | 6 | 22 | 30 | 33 | 45 | 44 | 28 | 20 | 22 | | | 277 |
| MEIN SCHIFF 2 | 9HJG9 | A | Miami | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| MELVILLE (AWS) | WECB | A | Los Angeles | 743 | 501 | 697 | 719 | 744 | 720 | 744 | 744 | 720 | 736 | | | 7068 |
| MESABI MINER | WYQ4356 | A | Duluth | 497 | 0 | 209 | 684 | 712 | 708 | 723 | 728 | 698 | 704 | | | 5663 |
| METTE MAERSK | OUJK2 | A | Los Angeles | 0 | 0 | 1 | 2 | 2 | 4 | 19 | 9 | 4 | 0 | | | 41 |
| MIDNIGHT SUN | WAHG | A | Seattle | 22 | 22 | 15 | 14 | 18 | 20 | 14 | 25 | 6 | 3 | | | 159 |
| MIKE O'LEARY | WDC3665 | A | Anchorage | 0 | 0 | 0 | 0 | 24 | 14 | 1 | 3 | 36 | 33 | | | 111 |
| MINERAL BEIJING | ONAR | A | Anchorage | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 81 | 84 | 22 | | | 234 |
| MINERAL BELGIUM | VRKF5 | A | Anchorage | 23 | 28 | 25 | 27 | 31 | 24 | 24 | 10 | 10 | 4 | | | 206 |
| MINERAL DALIAN | ONFW | A | Anchorage | 11 | 2 | 10 | 6 | 18 | 26 | 47 | 85 | 52 | 42 | | | 299 |
| MINERAL DRAGON | ONFN | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 52 | 39 | 108 | | | 200 |
| MINERAL FAITH | VRKS4 | A | Anchorage | 48 | 3 | 44 | 46 | 0 | 0 | 0 | 0 | 0 | 8 | | | 149 |
| MINERAL KYOTO | ONFI | A | Anchorage | 8 | 28 | 55 | 40 | 31 | 1 | 5 | 8 | 21 | 23 | | | 220 |
| MINERAL NEW YORK | ONGI | A | Anchorage | 25 | 17 | 18 | 15 | 1 | 18 | 13 | 1 | 0 | 0 | | | 108 |
| MINERAL NINGBO | ONGA | A | Anchorage | 205 | 189 | 209 | 179 | 75 | 56 | 0 | 0 | 0 | 0 | | | 913 |
| MINERAL NOBLE | ONAN | A | Anchorage | 47 | 32 | 27 | 27 | 25 | 20 | 61 | 41 | 45 | 44 | | | 369 |
| MINERAL TIANJIN | ONBF | A | Anchorage | 9 | 20 | 20 | 36 | 16 | 21 | 17 | 16 | 8 | 48 | | | 211 |
| MISS ROXANNE | WCX4992 | A | Kodiak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| MISSISSIPPI VOYAGER | WDD7294 | A | San Francisco | 51 | 21 | 20 | 1 | 16 | 14 | 3 | 4 | 9 | 22 | | | 161 |
| MOKIHANA | WNRD | A | San Francisco | 63 | 59 | 62 | 52 | 13 | 18 | 40 | 24 | 14 | 1 | | | 346 |
| MOKU PAHU | WBWK | A | San Francisco | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 6 |
| MOL PARADISE | 9V3118 | A | Anchorage | 0 | 12 | 5 | 17 | 10 | 17 | 20 | 1 | 0 | 0 | | | 82 |
| MONITOR | WCX9104 | A | Jacksonville | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 11 | 2 | 0 | | | 16 |
| MORNING HARUKA | A8GK7 | A | Anchorage | 8 | 21 | 10 | 0 | 0 | 0 | 8 | 3 | 0 | 23 | | | 73 |
| MSC POESIA | 3EPL4 | A | Miami | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| MUKADDES KALKAVAN | V7AP5 | A | New York City | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 46 | | | 48 |
| NACHIK | WDE7904 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| NAKOLO | WDD9308 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 3 | 0 | | | 8 |
| NANCY FOSTER (AWS) | WTER | A | Charleston | 0 | 0 | 110 | 543 | 473 | 477 | 210 | 319 | 154 | 304 | | | 2590 |
| NANUQ | WDF2026 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | | | 1 |
| NATHANIEL B. PALMER (AWS) | WBP3210 | A | Seattle | 146 | 32 | 299 | 301 | 347 | 316 | 278 | 288 | 453 | 570 | | | 3010 |
| NATIONAL GLORY | WDD4207 | A | Houston | 36 | 34 | 21 | 21 | 39 | 49 | 30 | 14 | 22 | 24 | | | 290 |
| NAVIGATOR | WBO3345 | A | Jacksonville | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| NAVIGATOR OF THE SEAS | C6FU4 | A | Houston | 5 | 10 | 53 | 27 | 14 | 19 | 18 | 44 | 36 | 47 | | | 273 |
| NEPTUNE VOYAGER | C6FU7 | A | New Orleans | 29 | 12 | 38 | 17 | 10 | 20 | 11 | 30 | 3 | 4 | | | 174 |
| NEVZAT KALKAVAN | TCMO2 | A | New York City | 46 | 36 | 36 | 29 | 27 | 45 | 22 | 25 | 50 | 27 | | | 343 |
| NEW HORIZON (AWS) | WKWB | A | Los Angeles | 743 | 669 | 690 | 619 | 0 | 0 | 0 | 0 | 0 | 0 | | | 2721 |

| SHIP NAME | CALL | Status | PMO | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NIEUW AMSTERDAM | PBWQ | A | Miami | 265 | 178 | 135 | 112 | 234 | 113 | 140 | 94 | 112 | 217 | | | 1600 |
| NOBLE DISCOVERER | A8XM6 | A | Seattle | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 65 | 63 | 0 | | | 128 |
| NOKEA | WDD6946 | A | Anchorage | 0 | 0 | 0 | 4 | 17 | 10 | 4 | 3 | 1 | 0 | | | 39 |
| NOORDAM | PHET | A | Miami | 100 | 182 | 135 | 32 | 28 | 14 | 278 | 172 | 56 | 250 | | | 1247 |
| NORDICA | OJAE | A | Seattle | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 104 | 111 | 24 | | | 261 |
| NORTH STAR | KIYI | A | Seattle | 12 | 28 | 16 | 21 | 32 | 11 | 14 | 38 | 8 | 29 | | | 209 |
| NORTHERN VICTOR | WCZ6534 | A | Anchorage | 10 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | | | 14 |
| NORTHWEST SWAN | ZCDJ9 | A | Anchorage | 33 | 40 | 50 | 8 | 10 | 14 | 43 | 25 | 19 | 14 | | | 256 |
| NORWEGIAN BREAKAWAY | C6ZJ3 | A | New York City | 74 | 42 | 42 | 24 | 16 | 1 | 9 | 33 | 54 | 56 | | | 351 |
| NORWEGIAN DAWN | C6FT7 | A | Miami | 195 | 58 | 98 | 141 | 167 | 59 | 21 | 21 | 5 | 552 | | | 1317 |
| NORWEGIAN EPIC | C6XP7 | A | Miami | 61 | 70 | 115 | 65 | 3 | 0 | 0 | 0 | 22 | 16 | | | 352 |
| NORWEGIAN GEM | C6VG8 | A | Jacksonville | 15 | 47 | 67 | 71 | 246 | 235 | 133 | 44 | 30 | 173 | | | 1061 |
| NORWEGIAN GETAWAY | C6ZJ4 | A | Miami | 50 | 68 | 53 | 101 | 62 | 15 | 11 | 24 | 6 | 13 | | | 403 |
| NORWEGIAN JADE | C6WK7 | A | Anchorage | 320 | 263 | 311 | 243 | 193 | 171 | 115 | 11 | 64 | 2 | | | 1693 |
| NORWEGIAN JEWEL | C6TX6 | A | Jacksonville | 181 | 203 | 207 | 160 | 101 | 201 | 97 | 68 | 52 | 34 | | | 1304 |
| NORWEGIAN PEARL | C6VG7 | A | Anchorage | 495 | 505 | 629 | 676 | 694 | 611 | 562 | 668 | 631 | 593 | | | 6064 |
| NORWEGIAN SKY | C6PZ8 | A | Miami | 34 | 55 | 37 | 35 | 43 | 34 | 39 | 161 | 40 | 51 | | | 529 |
| NORWEGIAN SPIRIT | C6TQ6 | A | New Orleans | 332 | 303 | 189 | 156 | 100 | 32 | 132 | 221 | 174 | 181 | | | 1820 |
| NORWEGIAN STAR | C6FR3 | A | Anchorage | 425 | 257 | 11 | 3 | 30 | 13 | 96 | 141 | 163 | 174 | | | 1313 |
| NORWEGIAN SUN | C6RN3 | A | Miami | 546 | 407 | 173 | 147 | 327 | 279 | 144 | 141 | 106 | 199 | | | 2469 |
| NOVA STAR | C6AZ4 | A | New York City | 0 | 0 | 0 | 0 | 1 | 14 | 0 | 14 | 23 | 4 | | | 56 |
| NUNANIQ | WRC2049 | A | Anchorage | 0 | 0 | 0 | 1 | 2 | 2 | 1 | 2 | 0 | 2 | | | 10 |
| NYK ARCADIA | 3EXI5 | A | Charleston | 11 | 2 | 0 | 12 | 5 | 7 | 5 | 2 | 15 | 0 | | | 59 |
| NYK FUSHIMI | 9V8741 | A | Anchorage | 0 | 0 | 0 | 0 | 23 | 13 | 0 | 0 | 0 | 0 | | | 36 |
| NYK LIBRA | HOJY | A | Los Angeles | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| NYK ROSA | 3FJM9 | A | Los Angeles | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| NYK RUMINA | 9V7645 | A | New York City | 20 | 19 | 26 | 16 | 3 | 33 | 30 | 23 | 21 | 28 | | | 219 |
| NYK TRITON | 3FUL2 | A | New York City | 62 | 3 | 42 | 28 | 53 | 39 | 38 | 64 | 39 | 38 | | | 406 |
| NYK VERONICA | 3EYJ5 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| OASIS OF THE SEAS | C6XS7 | A | Miami | 0 | 0 | 12 | 22 | 11 | 16 | 24 | 30 | 12 | 4 | | | 131 |
| OCEAN CRESCENT | WDF4929 | A | Houston | 43 | 0 | 6 | 21 | 12 | 45 | 36 | 7 | 44 | 47 | | | 261 |
| OCEAN EAGLE | WDG8082 | A | Anchorage | 0 | 5 | 1 | 0 | 10 | 7 | 1 | 0 | 0 | 0 | | | 24 |
| OCEAN GIANT | WDG4379 | A | Jacksonville | 32 | 0 | 0 | 0 | 0 | 0 | 20 | 26 | 37 | 55 | | | 170 |
| OCEAN GLOBE | KOGE | A | Houston | 0 | 0 | 20 | 21 | 7 | 17 | 5 | 26 | 0 | 0 | | | 96 |
| OCEAN HOPE 3 | WDF2354 | A | Anchorage | 1 | 3 | 9 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | | | 21 |
| OCEAN MARINER | WCF3990 | A | Anchorage | 0 | 0 | 0 | 0 | 6 | 11 | 7 | 1 | 3 | 1 | | | 29 |
| OCEAN NAVIGATOR | WSC2552 | A | Anchorage | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | | | 6 |
| OCEAN RANGER | WAM7635 | A | Anchorage | 13 | 7 | 0 | 0 | 0 | 5 | 15 | 21 | 6 | 0 | | | 67 |
| OCEAN TITAN | WDB9647 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| OCEAN WAVE | WDG3180 | A | Kodiak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| OCEANUS | WXAQ | A | Seattle | 0 | 0 | 0 | 52 | 77 | 29 | 56 | 62 | 47 | 10 | | | 333 |
| OKEANOS EXPLORER (AWS) | WTDH | A | New York City | 7 | 198 | 608 | 378 | 316 | 358 | 312 | 629 | 484 | 209 | | | 3499 |
| OLEANDER | V7SX3 | A | New York City | 29 | 34 | 40 | 34 | 31 | 31 | 28 | 32 | 33 | 34 | | | 326 |
| OLIVE L. MOORE | WDF7019 | A | Duluth | 108 | 0 | 0 | 152 | 264 | 292 | 239 | 203 | 286 | 274 | | | 1818 |
| OOCL HALIFAX | VQUQ4 | A | New York City | 0 | 12 | 42 | 20 | 14 | 22 | 35 | 20 | 37 | 42 | | | 244 |

| SHIP NAME | CALL | Status | PMO | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OOCL VANCOUVER | 3EBG2 | A | New York City | 5 | 15 | 10 | 18 | 41 | 69 | 49 | 50 | 6 | 1 | | | 264 |
| OOSTERDAM | PBKH | A | Anchorage | 415 | 268 | 382 | 294 | 282 | 331 | 264 | 229 | 220 | 254 | | | 2929 |
| ORANGE BLOSSOM 2 | D5DS3 | A | New York City | 10 | 3 | 16 | 11 | 3 | 0 | 4 | 5 | 38 | 8 | | | 98 |
| ORANGE OCEAN | D5DS2 | A | New York City | 31 | 17 | 20 | 19 | 34 | 39 | 84 | 61 | 84 | 48 | | | 437 |
| ORANGE SKY | ELZU2 | A | New York City | 0 | 0 | 0 | 8 | 11 | 2 | 2 | 4 | 4 | 2 | | | 33 |
| ORANGE STAR | A8WP6 | A | New York City | 0 | 0 | 0 | 0 | 0 | 14 | 9 | 12 | 1 | 9 | | | 45 |
| ORANGE SUN | A8HY8 | A | New York City | 10 | 13 | 11 | 30 | 15 | 6 | 24 | 25 | 16 | 18 | | | 168 |
| ORE DONGJIAKOU | 9V9116 | A | Anchorage | 104 | 63 | 78 | 79 | 15 | 0 | 0 | 0 | 0 | 0 | | | 339 |
| ORE ITALIA | 9V9129 | A | Anchorage | 28 | 33 | 43 | 7 | 16 | 9 | 97 | 371 | 342 | 95 | | | 1041 |
| OREGON II (AWS) | WTDO | A | New Orleans | 88 | 0 | 292 | 198 | 514 | 0 | 348 | 482 | 265 | 205 | | | 2392 |
| OREGON VOYAGER | WDF2960 | A | San Francisco | 1 | 1 | 1 | 7 | 6 | 3 | 1 | 5 | 0 | 0 | | | 25 |
| ORIENTAL QUEEN | VRAC9 | A | Anchorage | 12 | 11 | 0 | 0 | 0 | 0 | 0 | 6 | 14 | 4 | | | 47 |
| OSCAR DYSON (AWS) | WTEP | A | Anchorage | 190 | 372 | 462 | 147 | 644 | 555 | 516 | 646 | 519 | 296 | | | 4347 |
| OSCAR ELTON SETTE (AWS) | WTEE | A | Honolulu | 0 | 0 | 1 | 494 | 695 | 551 | 328 | 50 | 482 | 216 | | | 2817 |
| OSHIMANA | 9VAH9 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| OURO DO BRASIL | ELPP9 | A | Baltimore | 0 | 0 | 0 | 0 | 9 | 7 | 55 | 2 | 9 | 31 | | | 113 |
| OVERSEAS ANACORTES | KCHV | A | Miami | 12 | 13 | 20 | 16 | 18 | 7 | 3 | 18 | 10 | 36 | | | 153 |
| OVERSEAS ANDROMAR | V7HP4 | A | Los Angeles | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| OVERSEAS BOSTON | WJBU | A | Anchorage | 83 | 48 | 43 | 24 | 32 | 52 | 65 | 57 | 41 | 20 | | | 465 |
| OVERSEAS CASCADE | WOAG | A | 0Miami | 0 | 21 | 21 | 25 | 23 | 1 | 23 | 9 | 0 | 0 | | | 123 |
| OVERSEAS CHINOOK | WNFQ | A | Houston | 11 | 77 | 78 | 80 | 43 | 14 | 72 | 85 | 77 | 74 | | | 611 |
| OVERSEAS HOUSTON | WWAA | A | Miami | 0 | 2 | 6 | 6 | 4 | 5 | 2 | 0 | 0 | 2 | | | 27 |
| OVERSEAS LONG BEACH | WAAT | A | Houston | 38 | 36 | 12 | 2 | 0 | 7 | 12 | 31 | 7 | 3 | | | 148 |
| OVERSEAS LOS ANGELES | WABS | A | Seattle | 144 | 58 | 60 | 45 | 75 | 95 | 115 | 91 | 43 | 53 | | | 779 |
| OVERSEAS LUXMAR | WDC7070 | A | Miami | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| OVERSEAS MARTINEZ | WPAJ | A | Anchorage | 14 | 41 | 18 | 8 | 16 | 12 | 12 | 13 | 8 | 8 | | | 150 |
| OVERSEAS NIKISKI | WDBH | A | Anchorage | 18 | 23 | 24 | 20 | 21 | 31 | 30 | 29 | 29 | 18 | | | 243 |
| OVERSEAS SANTORINI | WOSI | A | Houston | 16 | 31 | 50 | 14 | 0 | 36 | 24 | 32 | 15 | 29 | | | 247 |
| OVERSEAS TAMPA | WOTA | A | Baltimore | 1 | 1 | 1 | 0 | 2 | 2 | 1 | 0 | 8 | 24 | | | 40 |
| OVERSEAS TEXAS CITY | WHED | A | New York City | 9 | 37 | 15 | 14 | 17 | 12 | 8 | 35 | 7 | 8 | | | 162 |
| PACIFIC CHALLENGER | WDD9281 | A | Anchorage | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | | | 11 |
| PACIFIC FREEDOM | WDD3686 | A | Anchorage | 0 | 0 | 0 | 4 | 2 | 1 | 2 | 3 | 0 | 0 | | | 12 |
| PACIFIC RAVEN | WDD9283 | A | Anchorage | 1 | 0 | 0 | 0 | 6 | 6 | 3 | 5 | 3 | 2 | | | 26 |
| PACIFIC SANTA ANA | A8W13 | A | Houston | 0 | 0 | 0 | 0 | 0 | 14 | 23 | 22 | 15 | 1 | | | 75 |
| PACIFIC SHARAV | D5DY4 | A | Houston | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 28 | 24 | | | 54 |
| PACIFIC STAR | WDD3686 | A | Anchorage | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | | 3 |
| PACIFIC TITAN | WCZ6844 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | | | 2 |
| PACIFIC WOLF | WDD9286 | A | Anchorage | 2 | 1 | 4 | 4 | 4 | 2 | 2 | 4 | 2 | 2 | | | 27 |
| PANDALUS | WAV7611 | A | Anchorage | 0 | 3 | 5 | 7 | 12 | 48 | 19 | 23 | 0 | 0 | | | 117 |
| PARADISE ACE | H9CL | A | Jacksonville | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| PARAGON | WDD9285 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 11 | 12 | 4 | | | 32 |
| PATRIARCH | WBN3014 | A | Jacksonville | 3 | 9 | 0 | 0 | 0 | 3 | 10 | 7 | 14 | 5 | | | 51 |
| PAUL GAUGUIN | C6TH9 | A | Anchorage | 7 | 73 | 67 | 40 | 45 | 64 | 48 | 18 | 2 | 46 | | | 410 |
| PAUL R. TREGURTHA | WYR4481 | A | Duluth | 420 | 0 | 309 | 689 | 700 | 675 | 714 | 502 | 550 | 620 | | | 5179 |
| PELICAN STATE | WDE4433 | A | New Orleans | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |

| SHIP NAME | CALL | Status | PMO | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PERSEVERANCE | WDE5328 | A | Anchorage | 54 | 86 | 49 | 56 | 0 | 0 | 65 | 26 | 136 | 15 | | | 487 |
| PHILADELPHIA EXPRESS | WDC6736 | A | Houston | 73 | 168 | 104 | 101 | 128 | 151 | 188 | 211 | 137 | 112 | | | 1373 |
| PHILIP R CLARKE | WDH7554 | A | Duluth | 0 | 0 | 2 | 18 | 17 | 20 | 72 | 77 | 54 | 44 | | | 304 |
| PILOT | WBN3011 | A | Jacksonville | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| PISCES (AWS) | WTDL | A | New Orleans | 36 | 0 | 0 | 0 | 5 | 345 | 362 | 284 | 138 | 333 | | | 1503 |
| POINT SUR | WSC2276 | A | Anchorage | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 2 |
| POLAR ADVENTURE | WAZV | A | Seattle | 28 | 29 | 6 | 6 | 37 | 8 | 17 | 55 | 71 | 42 | | | 299 |
| POLAR CLOUD | WDF5296 | A | Anchorage | 0 | 0 | 1 | 7 | 15 | 19 | 3 | 4 | 3 | 0 | | | 52 |
| POLAR DISCOVERY | WACW | A | Seattle | 15 | 34 | 104 | 16 | 0 | 6 | 23 | 10 | 34 | 20 | | | 262 |
| POLAR ENDEAVOUR | WCAJ | A | Seattle | 46 | 12 | 28 | 20 | 4 | 0 | 0 | 22 | 9 | 31 | | | 172 |
| POLAR ENDURANCE | WDG2085 | A | Anchorage | 0 | 21 | 0 | 1 | 8 | 6 | 4 | 3 | 6 | 12 | | | 61 |
| POLAR ENTERPRISE | WRTF | A | Seattle | 24 | 28 | 26 | 3 | 23 | 20 | 21 | 8 | 59 | 46 | | | 258 |
| POLAR KING | WDC7562 | A | Kodiak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| POLAR PIONEER | V7Si4 | A | Seattle | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 76 | 58 | 1 | | | 156 |
| POLAR RANGER | WDC8652 | A | Anchorage | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 4 | 7 | | | 15 |
| POLAR RESOLUTION | WDJK | A | Seattle | 314 | 157 | 111 | 41 | 93 | 84 | 51 | 2 | 0 | 72 | | | 925 |
| POLAR STORM | WDE8347 | A | Anchorage | 1 | 1 | 13 | 6 | 6 | 3 | 2 | 5 | 0 | 0 | | | 37 |
| POLAR VIKING | WDD6494 | A | Anchorage | 0 | 9 | 13 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | | | 43 |
| PREMIUM DO BRASIL | A8BL4 | A | Baltimore | 0 | 0 | 0 | 0 | 0 | 16 | 8 | 13 | 24 | 30 | | | 91 |
| PRESQUE ISLE | WDH7560 | A | Duluth | 42 | 0 | 0 | 34 | 35 | 47 | 25 | 2 | 15 | 58 | | | 258 |
| PRESTIGE NEW YORK | KDUE | A | Jacksonville | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| PRIDE OF AMERICA | WNBE | A | Anchorage | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 17 |
| PRINSENDAM | PBGH | A | Miami | 111 | 72 | 105 | 67 | 88 | 73 | 81 | 71 | 28 | 56 | | | 752 |
| PROSPEROUS | VRIA3 | A | Anchorage | 26 | 36 | 31 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | | | 117 |
| PSU EIGHTH | 9V6346 | A | Anchorage | 474 | 321 | 208 | 290 | 166 | 301 | 425 | 564 | 559 | 300 | | | 3608 |
| PT. THOMPSON | WBM5092 | A | Kodiak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 7 | 0 | | | 20 |
| R. J. PFEIFFER | WRJP | A | Los Angeles | 47 | 47 | 48 | 45 | 34 | 25 | 43 | 42 | 18 | 39 | | | 388 |
| R/V KIYI | KAO107 | A | Duluth | 0 | 0 | 0 | 0 | 0 | 1 | 21 | 0 | 9 | 7 | | | 38 |
| RADIANCE OF THE SEAS | C6SE7 | A | Anchorage | 77 | 10 | 17 | 33 | 20 | 0 | 0 | 0 | 4 | 4 | | | 165 |
| RAINIER (AWS) | NWS0011 | A | Seattle | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| RAINIER (AWS) | WTEF | A | Seattle | 0 | 0 | 0 | 82 | 684 | 323 | 500 | 432 | 229 | 563 | | | 2813 |
| RANGER | WBN5979 | A | Jacksonville | 0 | 6 | 0 | 14 | 6 | 0 | 0 | 0 | 0 | 0 | | | 26 |
| REBECCA LYNN | WCW7977 | A | Duluth | 0 | 0 | 0 | 0 | 14 | 7 | 4 | 6 | 5 | 7 | | | 43 |
| REDOUBT | WDD2451 | A | Anchorage | 0 | 0 | 18 | 0 | 11 | 40 | 0 | 0 | 0 | 0 | | | 69 |
| REGATTA | V7DM3 | A | Seattle | 0 | 30 | 8 | 15 | 4 | 11 | 24 | 117 | 67 | 17 | | | 293 |
| RESOLVE | WCZ5535 | A | Baltimore | 15 | 14 | 21 | 18 | 31 | 37 | 50 | 30 | 23 | 12 | | | 251 |
| REUBEN LASKER (AWS) | WTEG | A | Seattle | 0 | 0 | 0 | 0 | 0 | 0 | 421 | 510 | 544 | 561 | | | 2036 |
| RHAPSODY OF THE SEAS | C6UA2 | A | Anchorage | 58 | 44 | 58 | 17 | 26 | 36 | 14 | 1 | 22 | 34 | | | 310 |
| ROBERT C. SEAMANS | WDA4486 | A | Anchorage | 2 | 0 | 0 | 33 | 8 | 14 | 53 | 33 | 0 | 0 | | | 143 |
| ROBERT GORDON SPROUL (AWS) | WSQ2674 | A | Los Angeles | 0 | 0 | 0 | 0 | 0 | 0 | 560 | 743 | 688 | 692 | | | 2683 |
| ROBERT BLOUGH | WDH7559 | A | Duluth | 200 | 0 | 93 | 338 | 325 | 295 | 347 | 348 | 359 | 358 | | | 2663 |
| ROGER REVELLE (AWS) | KAOU | A | Los Angeles | 743 | 495 | 744 | 719 | 744 | 675 | 741 | 743 | 720 | 730 | | | 7054 |
| RONALD H. BROWN (AWS) | WTEC | A | Charleston | 310 | 279 | 693 | 440 | 407 | 592 | 286 | 538 | 99 | 8 | | | 3652 |
| RONALD N | A8PQ3 | A | Anchorage | 6 | 1 | 1 | 6 | 13 | 30 | 33 | 64 | 47 | 11 | | | 212 |

| SHIP NAME | CALL | Status | PMO | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RT. HON. PAUL J. MARTIN | VGFJ | A | Duluth | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | | | 19 |
| RTM DHAMBUL | 9V2783 | A | Anchorage | 10 | 1 | 3 | 22 | 6 | 18 | 7 | 13 | 4 | 2 | | | 86 |
| RYNDAM | PHFV | A | Miami | 32 | 60 | 64 | 55 | 48 | 49 | 27 | 63 | 40 | 42 | | | 480 |
| S/R AMERICAN PROGRESS | KAWM | A | Miami | 5 | 2 | 0 | 0 | 5 | 21 | 0 | 0 | 0 | 1 | | | 34 |
| SAGA ADVENTURE | VRBL4 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | | | 3 |
| SAGA ANDORINHA | VRMV6 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 15 | 51 | | | 67 |
| SAGA CREST | VRWR7 | A | Anchorage | 25 | 1 | 2 | 0 | 33 | 28 | 21 | 19 | 30 | 18 | | | 177 |
| SAGA FRONTIER | VRCP2 | A | Anchorage | 23 | 0 | 17 | 11 | 14 | 4 | 9 | 2 | 0 | 1 | | | 81 |
| SAGA FUTURE | VRKX8 | A | Anchorage | 109 | 59 | 85 | 30 | 37 | 2 | 0 | 0 | 14 | 10 | | | 346 |
| SAGA MONAL | VRZQ9 | A | Anchorage | 38 | 36 | 11 | 10 | 10 | 5 | 13 | 8 | 6 | 0 | | | 137 |
| SAGA NAVIGATOR | VRDA4 | A | Anchorage | 15 | 16 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 36 |
| SAGA PIONEER | VRED4 | A | Anchorage | 512 | 452 | 261 | 348 | 371 | 58 | 50 | 4 | 0 | 0 | | | 2056 |
| SAGA SPRAY | VRWW5 | A | Anchorage | 4 | 14 | 0 | 0 | 0 | 0 | 301 | 523 | 472 | 227 | | | 1541 |
| SAGA TUCANO | VRVP2 | A | Anchorage | 0 | 0 | 0 | 0 | 33 | 63 | 89 | 78 | 69 | 126 | | | 458 |
| SAGA VIKING | VRXO6 | A | Anchorage | 10 | 17 | 19 | 12 | 1 | 8 | 15 | 16 | 10 | 18 | | | 126 |
| SAIGON EXPRESS | VRBT7 | A | New York City | 0 | 0 | 9 | 68 | 14 | 62 | 26 | 7 | 2 | 19 | | | 207 |
| SAIPEM 7000 | C6NO5 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| SAM B | WDD5741 | A | Kodiak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| SAM LAUD | WZC7602 | A | Duluth | 84 | 0 | 0 | 3 | 66 | 72 | 81 | 58 | 33 | 133 | | | 530 |
| SAMSON MARINER | WCN3586 | A | Anchorage | 4 | 3 | 0 | 6 | 2 | 4 | 0 | 3 | 0 | 1 | | | 23 |
| SAMUEL DE CHAMPLAIN | WDC8307 | A | Duluth | 3 | 7 | 3 | 22 | 24 | 13 | 26 | 11 | 19 | 21 | | | 149 |
| SAN SABA | V7UT8 | A | Anchorage | 16 | 13 | 7 | 1 | 4 | 2 | 30 | 32 | 48 | 20 | | | 173 |
| SANDRA FOSS | WYL4908 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | | | 6 |
| SEA HAWK | WDD9287 | A | Kodiak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| SEA PRINCE | WYT8569 | A | Anchorage | 0 | 0 | 15 | 4 | 8 | 6 | 15 | 15 | 7 | 4 | | | 74 |
| SEA VOYAGER | WCX9106 | A | Kodiak | 41 | 42 | 36 | 36 | 41 | 47 | 32 | 15 | 54 | 29 | | | 373 |
| SEA-LAND CHARGER | WDB9948 | A | Los Angeles | 26 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 60 |
| SEA-LAND COMET | WDB9950 | A | Los Angeles | 35 | 29 | 11 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | | | 82 |
| SEA-LAND INTREPID | WDB9949 | A | Los Angeles | 18 | 16 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 50 |
| SEABOURN ODYSSEY | C6XC6 | A | Anchorage | 37 | 33 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 74 |
| SEABOURN QUEST | C6YZ5 | A | Miami | 64 | 74 | 65 | 25 | 2 | 0 | 0 | 0 | 44 | 64 | | | 338 |
| SEABULK ARCTIC | WCY7054 | A | Miami | 36 | 42 | 77 | 74 | 18 | 5 | 67 | 78 | 42 | 23 | | | 462 |
| SEABULK TRADER | KNJK | A | Miami | 0 | 0 | 10 | 33 | 49 | 36 | 43 | 33 | 34 | 21 | | | 259 |
| SEASPAN CHIWAN | VRBH3 | A | Anchorage | 27 | 20 | 0 | 19 | 15 | 17 | 8 | 0 | 10 | 0 | | | 116 |
| SENTINEL | WBN6510 | A | Jacksonville | 0 | 5 | 11 | 0 | 5 | 4 | 9 | 0 | 0 | 0 | | | 34 |
| SENTRY | WBN3013 | A | Jacksonville | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| SERENADE OF THE SEAS | C6FV8 | A | Miami | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| SESOK | WDE7899 | A | Anchorage | 0 | 0 | 0 | 4 | 22 | 34 | 24 | 18 | 26 | 12 | | | 140 |
| SEVEN SEAS MARINER | C6VV8 | A | Anchorage | 219 | 163 | 117 | 145 | 141 | 112 | 231 | 175 | 267 | 503 | | | 2073 |
| SEVEN SEAS NAVIGATOR | C6ZI9 | A | Anchorage | 0 | 43 | 118 | 183 | 114 | 306 | 275 | 376 | 216 | 443 | | | 2074 |
| SEVEN SEAS VOYAGER | C6SW3 | A | Anchorage | 25 | 21 | 20 | 13 | 0 | 2 | 20 | 6 | 29 | 2 | | | 138 |
| SHANDONG DA CHENG | 9V9131 | A | Anchorage | 88 | 10 | 4 | 23 | 58 | 32 | 103 | 47 | 18 | 123 | | | 506 |
| SHANDONG DA DE | 9V9128 | A | Anchorage | 191 | 255 | 57 | 40 | 51 | 38 | 54 | 61 | 28 | 30 | | | 795 |
| SHEILA MCDEVITT | WDE2542 | A | New Orleans | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| SIANGTAN | 9V9832 | A | Seattle | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 36 | 28 | | | 64 |

| SHIP NAME | CALL | Status | PMO | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SIDNEY FOSS | WYL5445 | A | Anchorage | 2 | 46 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | | | 51 |
| SIGAS SILVIA | S6ES6 | A | Anchorage | 521 | 584 | 490 | 450 | 114 | 302 | 425 | 158 | 70 | 414 | | | 3528 |
| SIKU | WCQ6174 | A | Anchorage | 0 | 0 | 0 | 77 | 225 | 215 | 123 | 154 | 217 | 184 | | | 1195 |
| SIKULIAQ (AWS) | WDG7520 | A | Anchorage | 715 | 632 | 743 | 383 | 0 | 0 | 290 | 738 | 593 | 628 | | | 4722 |
| SILVER SHADOW | C6FN6 | A | Anchorage | 0 | 0 | 0 | 0 | 15 | 13 | 6 | 9 | 1 | 0 | | | 44 |
| SIRIUS | WDD9272 | A | Kodiak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| SIRIUS VOYAGER | C6FG9 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| SNOHOMISH | WDB9022 | A | Anchorage | 0 | 0 | 0 | 17 | 7 | 0 | 0 | 0 | 0 | 0 | | | 24 |
| SOL DO BRASIL | ELQQ4 | A | Baltimore | 28 | 13 | 26 | 80 | 62 | 58 | 7 | 22 | 9 | 3 | | | 308 |
| SPAR | NJAR | A | Kodiak | 0 | 0 | 0 | 0 | 5 | 4 | 0 | 0 | 0 | 0 | | | 9 |
| SPLENDOUR OF THE SEAS | C6TZ9 | A | Anchorage | 157 | 168 | 114 | 132 | 91 | 48 | 114 | 306 | 191 | 126 | | | 1447 |
| SS MAUI | WSLH | A | Seattle | 24 | 29 | 21 | 20 | 0 | 0 | 0 | 39 | 45 | 61 | | | 239 |
| ST LOUIS EXPRESS | WDD3825 | A | Houston | 168 | 174 | 65 | 160 | 174 | 117 | 125 | 193 | 259 | 211 | | | 1646 |
| ST. CLAIR | WZA4027 | A | Duluth | 12 | 0 | 0 | 3 | 25 | 39 | 22 | 23 | 35 | 44 | | | 203 |
| STACEY FOSS | WYL4909 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 2 | 1 | 2 | | | 19 |
| STAR ATLANTIC | LAYG5 | A | Anchorage | 31 | 0 | 0 | 1 | 17 | 11 | 10 | 0 | 0 | 0 | | | 70 |
| STAR BREEZE | C6FR4 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| STAR DIEPPE | LEQZ3 | A | Anchorage | 19 | 58 | 38 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | | | 138 |
| STAR EAGLE | LAWO2 | A | New Orleans | 1 | 4 | 0 | 1 | 29 | 3 | 4 | 2 | 0 | 0 | | | 44 |
| STAR EVVIVA | LAHE2 | A | Seattle | 26 | 33 | 41 | 2 | 14 | 0 | 10 | 17 | 7 | 3 | | | 153 |
| STAR FLORIDA | LAVW4 | A | Jacksonville | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| STAR GRAN | LADR4 | A | Jacksonville | 0 | 0 | 0 | 0 | 0 | 20 | 1 | 0 | 6 | 2 | | | 29 |
| STAR GRIP | LADQ4 | A | Charleston | 2 | 0 | 0 | 0 | 0 | 5 | 8 | 5 | 27 | 11 | | | 58 |
| STAR HANSA | LAXP4 | A | Jacksonville | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| STAR HARMONIA | LAGB5 | A | Baltimore | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | | | 6 |
| STAR HERDLA | LAVD4 | A | New Orleans | 28 | 0 | 8 | 38 | 23 | 31 | 0 | 39 | 35 | 16 | | | 218 |
| STAR HIDRA | LAVN4 | A | Baltimore | 6 | 7 | 0 | 0 | 7 | 13 | 0 | 0 | 19 | 3 | | | 55 |
| STAR ISFJORD | LAOX5 | A | New Orleans | 0 | 0 | 0 | 2 | 1 | 0 | 10 | 28 | 0 | 4 | | | 45 |
| STAR ISMENE | LANT5 | A | Baltimore | 8 | 19 | 11 | 0 | 45 | 0 | 34 | 11 | 4 | 46 | | | 178 |
| STAR ISTIND | LAMP5 | A | Seattle | 17 | 28 | 0 | 5 | 0 | 48 | 3 | 4 | 1 | 0 | | | 106 |
| STAR JAPAN | LAZV5 | A | Seattle | 18 | 18 | 2 | 25 | 36 | 50 | 25 | 15 | 15 | 12 | | | 216 |
| STAR JAVA | LAJS6 | A | Baltimore | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 3 | 0 | | | 11 |
| STAR JUVENTAS | LAZU5 | A | Baltimore | 0 | 0 | 0 | 0 | 0 | 11 | 22 | 5 | 12 | 8 | | | 58 |
| STAR KILIMANJARO | LAIG7 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | | | 1 |
| STAR KINN | LAJF7 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | | | 3 |
| STAR KIRKENES | LAHR7 | A | New Orleans | 0 | 2 | 0 | 0 | 0 | 0 | 13 | 28 | 0 | 15 | | | 58 |
| STAR KVARVEN | LAJK7 | A | Seattle | 28 | 0 | 3 | 31 | 0 | 29 | 64 | 0 | 63 | 19 | | | 237 |
| STAR LIMA | LAPE7 | A | Jacksonville | 0 | 15 | 26 | 21 | 3 | 11 | 31 | 6 | 6 | 21 | | | 140 |
| STAR LINDESNES | LAQJ7 | A | Jacksonville | 48 | 50 | 30 | 29 | 20 | 12 | 19 | 12 | 0 | 16 | | | 236 |
| STAR LIVORNO | LAQM7 | A | Houston | 0 | 0 | 0 | 0 | 0 | 39 | 63 | 41 | 43 | 23 | | | 209 |
| STATE OF MAINE | WCAH | A | New York City | 45 | 0 | 0 | 0 | 64 | 20 | 33 | 0 | 0 | 0 | | | 162 |
| STEWART J. CORT | WDC6055 | A | Duluth | 445 | 0 | 44 | 692 | 700 | 710 | 724 | 435 | 719 | 732 | | | 5202 |
| STIKINE | WDC8583 | A | Anchorage | 3 | 0 | 0 | 9 | 9 | 9 | 13 | 11 | 13 | 14 | | | 81 |
| SUNSHINE STATE | WDE4432 | A | Miami | 7 | 10 | 0 | 1 | 1 | 8 | 1 | 0 | 0 | 14 | | | 42 |
| SUPERSTAR LIBRA | C6DM2 | A | Anchorage | 122 | 110 | 118 | 117 | 123 | 114 | 119 | 174 | 120 | 121 | | | 1238 |

| SHIP NAME | CALL | Status | PMO | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SUSAN MAERSK | OYIK2 | A | Seattle | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | | | 22 |
| SYLVIE | VRCQ2 | A | Anchorage | 9 | 11 | 0 | 0 | 0 | 0 | 0 | 13 | 11 | 7 | | | 51 |
| TAKU | WI9491 | A | Anchorage | 1 | 1 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | | | 6 |
| TALISMAN | LAOW5 | A | Jacksonville | 54 | 14 | 28 | 44 | 84 | 89 | 26 | 24 | 26 | 5 | | | 292 |
| TAN'ERLIQ | WDF2025 | A | Kodiak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| TANGGUH HIRI | C6XC2 | A | Anchorage | 43 | 43 | 29 | 44 | 84 | 89 | 90 | 81 | 94 | 57 | | | 654 |
| TAURUS | WDF4091 | A | Archorage | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | | | 1 |
| TECUMSEH | CFN5905 | A | Duluth | 0 | 0 | 0 | 15 | 11 | 14 | 1 | 7 | 0 | 0 | | | 48 |
| THOMAS JEFFERSON (AWS) | WTEA | A | Norfolk | 25 | 0 | 38 | 164 | 443 | 531 | 120 | 64 | 317 | 327 | | | 2029 |
| TIGLAX | WZ3423 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| TIM S. DOOL | VGPY | A | Duluth | 0 | 0 | 0 | 22 | 36 | 18 | 10 | 11 | 12 | 14 | | | 123 |
| TRIUMPH | WDC9555 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | | | 2 |
| TROPIC CARIB | J8PE3 | A | Miami | 60 | 64 | 65 | 0 | 1 | 0 | 105 | 101 | 41 | 37 | | | 474 |
| TROPIC EXPRESS | J8QB8 | A | Miami | 57 | 66 | 70 | 58 | 94 | 102 | 83 | 109 | 123 | 123 | | | 885 |
| TROPIC JADE | J8NY | A | Miami | 16 | 11 | 27 | 31 | 12 | 0 | 1 | 0 | 10 | 14 | | | 122 |
| TROPIC LURE | J8PD | A | Miami | 11 | 3 | 31 | 65 | 63 | 58 | 80 | 80 | 34 | 43 | | | 468 |
| TROPIC MIST | J8NZ | A | Miami | 21 | 20 | 6 | 13 | 24 | 10 | 0 | 24 | 1 | 29 | | | 148 |
| TROPIC NIGHT | J8NX | A | Miami | 40 | 33 | 44 | 31 | 30 | 41 | 29 | 25 | 35 | 44 | | | 352 |
| TROPIC OPAL | J8NW | A | Miami | 6 | 23 | 47 | 44 | 31 | 16 | 17 | 16 | 55 | 90 | | | 345 |
| TROPIC PALM | J8PB | A | Miami | 34 | 12 | 16 | 22 | 24 | 23 | 2 | 24 | 26 | 40 | | | 223 |
| TROPIC SUN | J8AZ2 | A | Miami | 92 | 87 | 117 | 11 | 41 | 89 | 81 | 83 | 57 | 103 | | | 761 |
| TROPIC TIDE | J8AZ3 | A | Miami | 37 | 31 | 35 | 42 | 18 | 40 | 65 | 74 | 64 | 62 | | | 468 |
| TROPIC UNITY | J8PE4 | A | Miami | 0 | 5 | 24 | 41 | 72 | 34 | 22 | 26 | 5 | 10 | | | 239 |
| TS KENNEDY | KVMU | A | New York City | 90 | 95 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 185 |
| TUG DEFIANCE | WDG2047 | A | Duluth | 20 | 0 | 0 | 4 | 51 | 27 | 41 | 25 | 57 | 63 | | | 288 |
| TUG DOROTHY ANN | WDE8761 | A | Duluth | 0 | 53 | 742 | 633 | 718 | 716 | 699 | 680 | 719 | 599 | | | 5559 |
| TUG MICHIGAN | WDF5344 | A | Duluth | 107 | 29 | 0 | 11 | 21 | 18 | 10 | 10 | 4 | 44 | | | 254 |
| TUG SPARTAN | WDF5483 | A | Duluth | 0 | 0 | 1 | 9 | 29 | 24 | 12 | 6 | 4 | 1 | | | 86 |
| TUSTUMENA | WNGW | A | Anchorage | 66 | 35 | 20 | 0 | 29 | 65 | 111 | 107 | 52 | 48 | | | 533 |
| TYCO DECISIVE | V7DI7 | A | Baltimore | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| TYCO DURABLE | V7DI8 | A | Baltimore | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| TYCO RESPONDER | V7CY9 | A | Baltimore | 0 | 0 | 0 | 20 | 21 | 57 | 69 | 53 | 3 | 31 | | | 254 |
| TYCOM RELIANCE | V7CZ2 | A | Baltimore | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| UACC RAS LAFFAN | A8VG7 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 35 | 29 | 49 | | | 136 |
| UBC SAIKI | P3GY9 | A | Seattle | 8 | 4 | 16 | 13 | 14 | 23 | 39 | 20 | 49 | 8 | | | 194 |
| UBC SANTA MARTA | 5BDK2 | A | New Orleans | 5 | 15 | 14 | 6 | 14 | 1 | 0 | 0 | 9 | 1 | | | 65 |
| UMANG | A8PF6 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| UNIQUE BRILLIANCE | VRXK4 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| UNIQUE EXPLORER | VRGT8 | A | Anchorage | 117 | 44 | 56 | 87 | 23 | 0 | 30 | 13 | 10 | 11 | | | 391 |
| UNIQUE GUARDIAN | VRJM6 | A | New Orleans | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | | | 19 |
| USCGC ALDER | NGML | A | Duluth | 6 | 0 | 8 | 3 | 31 | 0 | 5 | 7 | 7 | 0 | | | 67 |
| USCGC BRISTOL BAY | NRLY | A | Duluth | 3 | 0 | 28 | 32 | 17 | 1 | 0 | 0 | 0 | 0 | | | 81 |
| USCGC HEALY | NEPP | A | Seattle | 0 | 0 | 0 | 0 | 1 | 33 | 128 | 144 | 153 | 67 | | | 526 |
| USCGC MACKINAW | NBGB | A | Duluth | 0 | 0 | 0 | 7 | 16 | 0 | 5 | 0 | 2 | 1 | | | 31 |
| USCGC POLAR STAR | NBTM | A | Seattle | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |

| SHIP NAME | CALL | Status | PMO | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VALDEZ RESEARCH (AWS) | WXJ63 | A | Anchorage | 743 | 669 | 721 | 690 | 713 | 690 | 712 | 711 | 687 | 433 | | | 6769 |
| VEENDAM | PHEO | A | Miami | 289 | 433 | 361 | 357 | 25 | 140 | 161 | 118 | 186 | 199 | | | 2469 |
| VEGA VOYAGER | C6FV3 | A | Anchorage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| VISION OF THE SEAS | C6SE8 | A | Miami | 21 | 28 | 19 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | | | 70 |
| VOLENDAM | PCHM | A | Anchorage | 56 | 129 | 212 | 158 | 125 | 72 | 276 | 233 | 225 | 271 | | | 1757 |
| VOYAGER OF THE SEAS | C6SE5 | A | Miami | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| W. H. BLOUNT | C6JT8 | A | New Orleans | 60 | 55 | 40 | 47 | 44 | 55 | 55 | 47 | 41 | 39 | | | 483 |
| WALTER J. MCCARTHY JR. | WXU3434 | A | Duluth | 18 | 0 | 0 | 60 | 88 | 29 | 0 | 0 | 26 | 164 | | | 385 |
| WASHINGTON EXPRESS | WDD3826 | A | Houston | 63 | 30 | 53 | 102 | 120 | 100 | 24 | 47 | 87 | 92 | | | 718 |
| WEST VELA | 3FNX5 | A | Houston | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| WESTERDAM | PINX | A | Miami | 183 | 112 | 113 | 108 | 50 | 92 | 169 | 29 | 113 | 120 | | | 1089 |
| WESTERN NAVIGATOR | WDE6616 | A | Anchorage | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 1 |
| WESTERN RANGER | WBN3008 | A | Anchorage | 3 | 5 | 0 | 0 | 1 | 19 | 5 | 3 | 0 | 0 | | | 36 |
| WESTWOOD CASCADE | ELWZ5 | A | Seattle | 38 | 39 | 66 | 41 | 8 | 5 | 4 | 1 | 4 | 2 | | | 208 |
| WESTWOOD COLUMBIA | C6SI4 | A | Seattle | 16 | 14 | 27 | 29 | 31 | 37 | 29 | 35 | 15 | 25 | | | 258 |
| WESTWOOD OLYMPIA | C6UB2 | A | Seattle | 0 | 3 | 26 | 9 | 8 | 0 | 0 | 0 | 0 | 0 | | | 46 |
| WESTWOOD RAINIER | C6SI3 | A | Seattle | 1 | 10 | 10 | 12 | 16 | 11 | 11 | 16 | 12 | 11 | | | 110 |
| WHITTIER RESEARCH (AWS) | KXI29 | A | Anchorage | 743 | 669 | 744 | 720 | 744 | 720 | 743 | 742 | 717 | 733 | | | 7275 |
| WILFRED SYKES | WC5932 | A | Duluth | 0 | 0 | 0 | 501 | 744 | 719 | 743 | 533 | 714 | 740 | | | 4694 |
| XPEDITION | HC2083 | A | Anchorage | 8 | 0 | 0 | 16 | 0 | 1 | 12 | 0 | 0 | 0 | | | 37 |
| YACHT EXPRESS | PJVV | A | Miami | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 |
| YM ANTWERP | VRET5 | A | Anchorage | 24 | 28 | 30 | 8 | 4 | 0 | 2 | 0 | 0 | 10 | | | 106 |
| YORKTOWN EXPRESS | WDD6127 | A | Houston | 35 | 41 | 18 | 21 | 2 | 35 | 51 | 21 | 21 | 36 | | | 281 |
| YUHSAN | H9TE | A | Anchorage | 0 | 0 | 0 | 7 | 32 | 25 | 9 | 0 | 0 | 0 | | | 73 |
| YUYO SPIRITS | 3FNF4 | A | Anchorage | 33 | 0 | 0 | 0 | 0 | 20 | 5 | 3 | 0 | 0 | | | 61 |
| ZAANDAM | PDAN | A | Anchorage | 498 | 524 | 499 | 105 | 80 | 162 | 99 | 388 | 353 | 262 | | | 2970 |
| ZIM DJIBOUTI | A8SI4 | A | Seattle | 0 | 12 | 29 | 40 | 6 | 30 | 28 | 11 | 11 | 5 | | | 172 |
| ZIM SHANGHAI | VRGA6 | A | New York City | 18 | 12 | 16 | 19 | 26 | 18 | 12 | 17 | 20 | 19 | | | 177 |
| ZIM SHEKOU | A8KX2 | A | Baltimore | 0 | 0 | 35 | 26 | 0 | 0 | 0 | 17 | 13 | 1 | | | 92 |
| ZIM YOKOHAMA | A8MY4 | A | Charleston | 13 | 17 | 21 | 4 | 6 | 0 | 0 | 0 | 0 | 0 | | | 61 |
| ZUIDERDAM | PBIG | A | Anchorage | 141 | 81 | 175 | 163 | 197 | 135 | 101 | 42 | 99 | 125 | | | 1259 |

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## NOAA Weather Radio Network

(1) 162.550 mHz
(2) 162.400 mHz
(3) 162.475 mHz
(4) 162.425 mHz
(5) 162.450 mHz
(6) 162.500 mHz
(7) 162.525 mHz

Channel numbers, e.g. (WX1, WX2) etc. have no special significance but are often designated this way in consumer equipment. Other channel numbering schemes are also prevalent.

The NOAA Weather Radio network provides voice broadcasts of local and coastal marine forecasts on a continuous cycle. The forecasts are produced by local National Weather Service Forecast Offices.

Coastal stations also broadcast predicted tides and real time observations from buoys and coastal meteorological stations operated by NOAA's National Data Buoy Center. Based on user demand, and where feasible, Offshore and Open Lake forecasts are broadcast as well.

The NOAA Weather Radio network provides near continuous coverage of the coastal U.S, Great Lakes, Hawaii, and populated Alaska coastline. Typical coverage is 25 nautical miles offshore, but may extend much further in certain areas.

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